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SESSIONAL PAPERS

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS,

Incorporated in the Seventh Year of William IV.

PATRONESS . . HER MOST GRACIOUS MAJESTY THE QUEEN.
PATRON . . . HIS ROYAL HIGHNESS THE PRINCE OF WALES.

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1865.

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PAPERS

READ AT

The Royal Institute of British Architects,

SESSION 1864-65.

USUI CIVIUM, DECORI URBIUM.

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TABLE OF CONTENTS.

TITLE.	AUTHOR.	DATE.	PAGE.
Opening Address	By Professor Donaldson, President.	Nov. 7th, 1864.	1 — 14
A Discussion upon the Report of the Artistic Architectural Education Committee.	....	Nov. 21st, „	15 — 24
Some Notice of Office Buildings in the City of London *(with two illustrations).*	By Edward I'Anson, Fellow.	Dec. 5th, „	25 — 36
On the Construction of Theatres . . .	By Warington Taylor, Esq.	Dec. 19th, „	37 — 49
Some Information forwarded from Abroad to the Honorary Secretary for Foreign Correspondence.	....	Jan. 9th, 1865.	51 — 62
A few Suggestions on the Introduction of Coloured Bricks, &c. in Elevations.	By Henry A. Darbishire, Fellow.	Jan. 23rd, „	63 — 74
An Account of St. Nicholas Church, Great Yarmouth *(with four illustrations).*	By J. P. Seddon, Hon. Sec.	Feb. 6th, „	75 — 84
On English Woodwork in the Thirteenth and Fourteenth Centuries *(with three illustrations).*	By G. E. Street, Vice-President.	Feb. 20th, „	85 — 102
Discussion on Mr. G. E. Street's Paper on English Woodwork in the Thirteenth and Fourteenth Centuries.	....	Mar. 20th, „	103 — 108
On Fire-Proof Materials and Construction.	By T. Hayter Lewis, F.S.A., Fellow.	April 3rd, „	109 — 126
On the present tendencies of Architecture and Architectural Education in France.	By George R. Burnell, Fellow.	April 24th, „	127 — 137

TITLE.	AUTHOR.	DATE.	PAGE.
An Enquiry into some of the Conditions at present affecting the study of Architecture in our Schools	By J. Ruskin, Esq. . . .	May 15th, 1865.	139 — 156
A Discussion upon Mr. G. R. Burnell's Paper on the present tendencies of Architecture and Architectural Education in France	…………	May 29th, ,,	157 — 164
A short description of the Manchester Assize Courts *(with two illustrations)*.	By Alfred Waterhouse, Fellow.	June 12th, ,,	165 — 176
Some Account of the Alterations and new Buildings at the Guildhall, City of London *(with two illustrations)*.	By Horace Jones, Fellow.	June 26th, ,,	177 — 185

APPENDIX.

Fettes College, Edinburgh, by David Bryce, F.S.A., Fellow *(with illustration)* . i — iii

Mr. Parker's Remarks on recent Archæological Investigations at Rome . . iv — vii

OPENING ADDRESS BY THE PRESIDENT,

Professor T. L. Donaldson, Ph. D.

At the Ordinary General Meeting of the Royal Institute of British Architects, November 7th, 1864.

Gentlemen,—We are now entering upon the thirty-first Session of our Institution, and we can count among our Members, 227 Fellows, 163 Associates, 17 Honorary Fellows and Members, 70 Foreign Honorary and Corresponding Members, and 25 Students and Contributing Visitors, making a total of 502. We have a comparatively perfect organization of Council and earnest working officers. In fact, we have risen to a position in which all those, who claim to belong to our profession, seek to be associated. In saying this, I believe that I use no exaggerated expression of gratulation or triumph. For what professional Society of Architects, nay, I may almost say, what body of illustrious men connected with the arts and sciences, and confining themselves to the strictly highest branches of their pursuit, can challenge the progress we have made in these thirty years of our existence? What Institution has its relations in so many parts of the Continent, nay, in the World, as ourselves; for we have ours in the North and South, in the far East and in the distant West. What Society is there whose influences have been so general as our own, when we find other Societies eagerly watching our proceedings and guided by our operations. Our Institute, fixing the tone of professional practice and our code quoted as authoritative in the Courts of Law—establishing a system of professional education of the most complete character—recognised by the Legislature, and testing the qualifications of candidates for appointments as district surveyors under the Building Act, and influencing even the judgment and decisions of the House of Commons upon a practical point, as that connected with the retention of the late Exhibition Building.

I do not pretend to say, that we have acted throughout with the most sober judgment, or with all possible energy and activity. But it must be recollected, that what we have effected, although done under the immediate patronage of the Crown, has been realised without Government aid, and through the contributions of our Members and private individuals; that at our earliest formation we had many professional prejudices to overcome, many adverse judgments to reconcile, many personal jealousies to conciliate—But in spite of all this we have so far succeeded, and are ready progressively to confirm our position, to advance with the rapid progress of society and of science, to keep our Profession in the van, and to maintain its rank among the learned and scientific institutions of the Empire.

I have read with much pleasure and instruction several of the papers written by Members of the local societies, and a recent one by Mr. Frith, of Bristol, on the subject, of "*What should be the aim of our Architecture at this time?*" contains much suggestive matter and just reflections upon the present state of the principles of taste in our art. To one of his observations, however, I think objection may be taken, when he says, that "we must learn to set aside all the decorative features of Italian architecture, which do not spring from constructive requirements, such as attached columns and pilasters with all their ordinances—to accept no precedent, which does not meet the critic's eye with a more satisfactory reason for its use, than what we employ now, in saying 'it is quite correct.'" I know not why Mr. Frith does not include under the same restriction Mediæval as well as Italian architecture. But I cannot add my adhesion to this law of *use* to be applied as the test of the proper adoption of many features in our art, for this would reduce it to a mere utilitarian plainness, and strike out from architectural composition many details, that give playfulness, grace, and variety of outline. The very attached columns and pilasters alluded to, may serve as buttresses and counterforts, and give stability and strength to a wall, breaking up its plainness and at the same time be pleasing features, like ballustrades, pedestals, vases, and other accompaniments. If we apply this meagre puritanical rule of matter to art, what would Mediæval composition be, deprived of shafts, buttresses, canopies, pinnacles, introduced in its rich screenwork, whether of stone or wood? There must be a certain conventionalism in decorative art, and although it must borrow its leading features from some type that has *use* as its basis—yet the imaginative poetic mind of the artist must have full play and freedom of treatment, at the same time that it may be restrained by the sober rules laid down by Horace and Vitruvius. Fancy is a valuable gift. It is that action of the mind, which at pleasure presents to itself impressions, the result of preconceived notions, or the forms, images and representations of things. It may be the result of education and taste, or of a refined innate sensibility for form and colour. Doubtless it may be very dangerous, when it degenerates into caprice, seeking to express a sudden ill-regulated affection or predilection, disregarding wholly the strict rules of art, yielding to a rather licentious liberty, and yet it may be pleasing and attractive by certain graceful combinations. Such were the styles of the Flamboyant and of Louis XIV. and XV., and many compositions at Rome, as the productions of Bernini and Borromini with all their impurity, and we may quote in the English school Vanbrugh as a brilliant example of poetic grandeur in composition. These were epochs of violent instinct and sudden determination, uncontrolable sympathies and disregard of the material made to minister to the wildest flights, and the fresh excitement of sensuous gratification compensated for the inherent defects of abrupt impulses. Their works, the result of ardent minds, have excited the wonder and admiration of succeeding times, as the efforts of a gifted race of artists. Human nature is so constituted, that such productions cannot pass unheeded; but on the contrary they must influence the feelings however discordant in many respects. In such instances Mr. Frith's observations apply with peculiar force, and are instructive to the practitioner at every period of life. Precedent has its weight as well as use; the mind, however, of the artist must have a certain range, if we are to expect the highest aspirations of genius—and to profit by its revelations.

I am pleased to observe that the success of this Institute has led our professional brethren in and near the principal provincial towns, to form similar societies for the promotion of the art, and the maintenance of a high tone of professional practice and character, alike honorable and advantageous to the employer and the employed. Liverpool, Manchester, Birmingham, Bristol, Glasgow, and other great centres of commercial and manufacturing industry, have their architectural meetings, read papers, and discuss questions of general interest, connected with architecture, archæology and construction. This is the more necessary, as the material prosperity of our large towns, with the developement of their municipal operations, necessitate the erection of town halls, libraries, picture galleries, courts of law, athenæums, hospitals, schools, churches, and other important edifices. These require an education of the highest order, as well as distinguished talents, so that the productions may be worthy of the appeal made to the taste and scientific requirements of the architect. These local associations have been obliged to relax the strict rule of membership observed by us, but generally they are guided by the same principles as ourselves. I have however observed with regret, that some of the provincial societies, instead of strengthening their own position and that of the profession generally, by accepting in its integrity the scale of professional charges adopted after the most painstaking and deliberate investigation by this Institute, have sought to publish a distinct scale of their own, founded generally upon that of the Institute without acknowledgment, and introducing modifications of purely a local nature. This is a sad mistake. The Table of the Institute has been accepted by legal men in the Metropolis, and quoted in the courts as an authentic document drawn up by the heads of the profession, and as authoritative in settling such questions of professional usage, and as mutually binding between the employer and employed. The provincial Table deprived of the sanction of the great central body, and resting only upon the authority of a limited circle of professional men, cannot have the same weight as the code of the Institute. The resolution of the Architectural Association on the subject is very judicious, as it very properly stated "that it would be most injurious to the Profession to have two published lists of charges."

I feel that I may congratulate the Institute on the important influence it exercised in causing the building for the International Exhibition of 1862 to be no longer thought of as a permanent erection; but as one which from its imperfect arrangement of plan, and temporary nature of its construction, could not be adapted to a permanent purpose. Its very destruction has afforded the opportunity for a very successful application of military engineering in overthrowing the vast masses of brickwork, by the application of gunpowder, which no other means could so promptly have accomplished. Another result has been the intention of the Government (when to be carried out it is difficult to predict) to erect a new building on the site appropriated, for the Museum of Patents, the zoological and other collections of the British Museum, and for like purposes. The programme having been drawn up was submitted to public competition. The first prize was awarded to Captain Fowke, (who designed the original building) for a composition of considerable merit, in which he introduced many grand architectural features, and a happy disposition of plan, so that, with certain improvements in the details, which careful study in the execution must necessarily produce, the new building will be a noble addition to the monumental structures of the metropolis, and be a permanent evidence of the capacity and taste of its author (who is now Candidate and we hope may soon become a Fellow of our Institute), and whom we cordially congratulate upon his success. At the same time we have to notice our Fellow, Professor Kerr, as having the second place in the competition, with a well arranged plan and effective elevations.

In my address upon the opening of our last Session, I alluded to the imperfect means and sources of instruction within the reach of the architectural student. This subject has been taken up by one at the head of our profession, whose own productions are evidences of refined taste, solid judgment and extensive learning, and whose skill and experience are instanced in his numerous, and I may say numberless, works, many of them the finest productions of modern times in Mediæval art. Mr. Scott in a carefully written paper, has sketched out a view of the wants of the young Architect, and the mode in which the deficiency should be supplied. A committee of the Institute was appointed, consisting not merely of professional men, but of others experienced in the subject, and capable of affording most valuable advice and suggestions, such as Beresford Hope, Esq., Professor Westmacott, R.A., E. W. Cooke, R.A., and Mr. Ruskin. We had several meetings of the most interesting character, and considered the best means of providing instruction; the discussions, which have occurred, eliciting opinions from some of the most able men, competent to advise in a matter of such professional importance. It has been argued, not in an exclusive or sectarian spirit, nor with preference to any particular part or class of art; for we should love them all with fervor, and it is this profound love, which should lead us to desire, that all styles of art should be upon a level and have fair play. Each of us may have and has his preferences, but this should not lead us to depreciate the qualities that exist in a style preferred by others. The report of this committee will be submitted for discussion to your consideration at our next meeting. The scheme proposed, suggests that "the instruction should embrace the drawing and modelling of organic forms with a view to the attainment by the student of such an accurate knowledge of their structure, as should enable him to apply them in decoration with power and truthfulness, and to form an intelligent comparison of their treatment by the masters of every period of art, and in the monuments whether of ancient or modern times." To carry out such a purpose proper instructors must be found, and other requisite means of study provided, as also the efficient and vigilant superintendence of the able scheme ensured by the earnest co-operation of the members of the profession. In addition to moderate fees to be paid by the students, it will be necessary in the first place, that liberal contributions from our members should provide the means for procuring the several requisites of fittings and conveniences to commence and carry on the school, and the committee rely upon your generous concurrence to furnish the funds for the purpose.

I have been reminded by our Secretaries, that it is necessary to appeal to the Members for papers to be read during the ensuing Session. It is not in the power of the Council and other office-bearers to do all that is necessary to maintain healthful and fruit-bearing vitality in the proceedings of the Institute. It is with no common feelings that the Council watch over and direct the transactions of the year. And it is a matter of painful anxiety with the Secretaries, to have papers ready for each ensuing evening, and not to be left entirely to mere casual contributions. They can only make the best use of the means, which they may perchance have placed at their disposal. This is not as it should be. For being appointed by the general body of the Institute in their responsible positions as Honorary Officers, it is for the Members to provide those means, that is of an intellectual nature, communications at once interesting and instructive, and not necessarily elaborate, so that those who attend our ordinary meetings may be sure of finding facts or questions stated, reasoned upon and developed in connexion with the various artistic and structural creations of the past or present times.

There is reason to feel that this responsibility, casually alluded to in my last address, has not been generally appreciated by the profession. The Secretaries have not in this respect been adequately supported, and I must observe that literary contributions have been given on several occasions during the last Session by our Members to collateral associations, which ought to have had their more fitting place of delivery here. Thus the energy of the Members has been dissipated instead of being concentrated, and the novelty of a new sphere has had more attractions than their "Alma Mater." Ought not the welfare of the Institute to hold the first place in the consideration of the Members? To be secondary would it not descend from its proper state and consequence, and then be no longer worthy of the Profession? I appeal to the Members to appreciate the importance and necessity of these observations, and to afford efficient aid in respect of papers. They need not be long nor elaborate. Sometimes the simplest statement of facts, or description of a building, or process in construction, may contain matter worthy the institution, the auditory and the reputation of the author. And by such communications the friendly suggestions of all classes of Members may be elicited and unreservedly offered, defects detected, mutual energy induced, and a more soul stirring spirit of co-operation excited. A paucity of papers and of the "*esprit du corps*" entails the most serious consequences.

The self-respect of our Members may be stimulated by the example of one of the highest dignitaries of the Roman Catholic Church in these realms. Cardinal Wiseman has recently delivered before the Members of the Architectural Museum a lecture "On the past and present and the prospects of the future for good architecture in London," and I think I may add "*in England*," if I may be permitted to follow up the scope of the remarks of his Eminence. We must all feel grateful, that such a topic should have been handled by so high an authority, with such fine perception and discrimination for the monuments of our art, with so wide an acquaintance with its finest productions, and to so practical a purpose. It is of the utmost importance, when one so exalted in rank and of such cultivated taste vindicates that which is pure in our art, and raises a teaching voice to the Profession as well as to the Public in general.

Nor can it be admitted, that there are not topics enough, dark and obscure questions, still to be investigated and elucidated by our thoughtful Architects. When the revival of classical literature produced, as a natural consequence, the revival of the study of ancient art and monuments, then the enlightened men of the XVIth century applied themselves to the patient and earnest investigation of those relations, which obtained in the edifices of Classic Antiquity. They laid down the rules and laws of proportion in regard to the orders, dimly shadowed by Vitruvius. These canons have been misunderstood and misrepresented in later times, and never more so than in the present. They were offered as elementary, liable to change as taste and refinement of perception might suggest, but they have been considered as arbitrary and empirical trammels to taste, and what were meant as merely proximate results have been assumed to be positive and final.

Mediæval Art has not as yet been so investigated, and some may say it never can be. Can positive proportions be laid down, as to the relations in size in the several parts of a column, the base, shaft and capital? In the group of a range of mouldings? Or in the mutual relations of proportion in the apertures of doors or windows, or in their respective dressings? No law has been discovered in the relative bearings of piers, or openings of arches of naves in their breadth and height. The just width and height of a nave, or tower, or spire, have still to be ascertained. Who has yet had the patience or grasp of mind philosophically to dive into the mysterious relations and parts, which constitute the beautiful in the choir of Lincoln, in the nave of Westminster Abbey, in the façade of Cologne, or in the massive energy of Durham? Whence the source of the impressions, which these remarkable structures produce?

I would also venture to suggest subjects still requiring investigation, such as the positivism reigning in some minds at variance with the idealism of the poetic temperament in others. Such consider that there is no room for beauty except in absolute stone, brick or metal as to the substance, and of use or usefulness as to the application; and that grace, expression and meaning cannot exist except in some immediate materialism. They acknowledge no poetry or proper fancy unless embodied in the rarer and more precious materials, and that sensuous impressions are necessary to give reality to those of mere abstract imagination.

Would it be unprofitable to enquire to what extent the happy genius of great artists may by an intuitive instinct have lived in an atmosphere of beautiful ideas and consciousness of grace, expression and sentiment, so as to translate and embody them in their own creations, as by a divine afflatus? May it not be that in former periods the mysterious relations of beauty were known and laid down practically in positive canons, and that the great superiority of their works consists in the happy temperament of those artists, who felt most powerfully the best mode of applying those canons, so as to convey to others the impressions they themselves experienced and sought to excite.

In the divine order of the universe it cannot be doubted, that there are certain fixed laws of beauty dependent upon certain relations; upon a fitness, harmony, and proportion, as yet unrevealed and consequently unascertained. So in art we recognize a like influence. It remains for some high intellect and discriminating mind to interpret these laws and to penetrate and develope the mysterious relation by existing examples.

In what consists the grand peculiarities of Greek art? for its moral grandeur and unequalled purity are not merely legendary, nor is our admiration based upon our religious feelings, as is the case with mediæval productions. Our recognition of their power is apart from all passion. Our reverence rests upon objects devoted to a distinctly different theological origin. We have no immediate affinity of customs, thought or literature in common with those of the times in which they were produced. May we not be considered as impartial judges uninfluenced by considerations, that might otherwise warp the judgment, when we bow with reverence to the mighty genius of the Greeks in art and in letters?

Not to mention the many curious and important questions in construction, which arise from the numerous new materials and combinations of materials brought under the notice of Architects and Engineers, and their structural application, I may perhaps be permitted to suggest, that the description of the many important buildings in course of erection will afford much instruction. Probably the greatest profit may result from such communications. It argues no assumption on the part of the Architect, for he merely states the requirements he may have had to satisfy, the special difficulties he may have had to encounter, and the means he may have adopted to carry out his conception,—and who can explain them so well as he? And we have witnessed such occasions at our meetings, when this plain, unvarnished, earnest, statement has rivetted attention and received the grateful recognition of all present.

I throw out these hints to shew how wide a field there is for interesting Papers. And in addition, there are the vivid impressions on the minds of those Architects, who visit the Continent and who, whether in France, Germany, Italy, or other states, will have found much that ought to be recorded, both as to the productions of past and present times and as to the place they should hold as works of art. Without the intention of depreciating any, we may be permitted to compare them with those of other periods and countries, to ascertain their true relative value, and to husband them as preciously suggestive. We should also observe the rapid progress made of late in France, where a new era of improvement has made gigantic strides, and Architecture, under the presiding enlightened genius of a great mind, contributes to the convenience, health and dignity of the Metropolis and of the Provincial Towns.

How is it that the Crown, the Government, and the Parliament of Great Britain have a kind of paralytic atrophy of feeling in regard to their duty to endow the country with useful monuments that should add to its comfort, its embellishment, and its grandeur?—regarding each other with a kind of awe, lest the one should ask too much and the other grant too little; each thinking that adequate and appropriate buildings can be erected with a small outlay and a miserable disregard of the nobility of architecture; thinking that a grudging economy is not unworthy of a nation like ours, great in its political position among nations, and rich in its resources. Why are such buildings still to be desired as public offices for our departments to replace the paltry hired accommodation rented at enormous sums? Why are the Law Courts of the Metropolis, for which the funds are ready and lying idle, not begun? or the accesses to the new quays forming on the banks of the Thames at a stand-still? or the restoration of the Chapter House at Westminster? or the Chapel of the Holy Rood at Edinburgh, a disgrace as a religious appurtenance to the palace of our Sovereign, not contemplated? or our Harbours of Refuge disregarded, as are many other such public works, demanded by the necessities of the nation or the feelings of the public? Why are such to find no place in the estimates of the Chancellor of the Exchequer of an empire, whose actual income sits lightly upon it, though reaching to seventy millions? Is the realization of such wants to be left to future generations, and thus the present to be deprived of the enjoyment it ought to possess, if those at the head of affairs conceived their duties aright? Is it to be reserved to us to contemplate the accomplishment of such operations by the history of Imperial Rome of the past, or the example of enlightened Bavaria and Imperial France of the present? Is Imperialism necessary for such high and lofty considerations?

This allusion to our neighbours leads me to the subject of what we are actually doing at home. You are aware that at the commencement of the last Session of Parliament this Institute petitioned both Houses to consider the present state of the thoroughfares of London, and suggested their improvement, as preliminary to any concession to Metropolitan Railways, so many projects for which threatened to render London uninhabitable and unfitted even for commercial purposes. It would have been converted into one huge Central Railway Station for the accommodation of the diverging and traversing lines. If Parliament had but listened to this suggestion from practical men, our whole system of street communication might have been re-modelled, upon as broad a system of distribution as that proposed by Sir

Christopher Wren for the City of London after the great fire, and the neglect of which has entailed consequences, to which we are daily more and more the victims. The Railroads themselves might have been made to contribute to the cost of lines of openings, which would have been available for their accommodation, and necessitated by the accumulation of their traffic, now concentrated at remote and inaccessible points. Such considerations have had their due influence with the authorities in Paris, who have not neglected the opportunities, but have nobly met the necessities of that City. The spirit of individual improvement has, however, of late years been active in the City of London. Our Merchants and Manufacturers have pulled down insignificant houses and carried up magnificent piles of warehouses. Our Bankers have almost entirely re-built Lombard Street within a few years, leaving only the elegant work of Sir Robert Taylor, the Pelican Office, as a relique of the past. Speculation also has been rife, and the smallest sites in the densest portions of the City and narrowest streets have fetched fabulous prices, with an almost reckless disregard of consequences. But all this has been without any improvement in the thoroughfares or reference to general convenience; and essentially the City is daily becoming more and more difficult to traverse, whether for foot-passengers, carriages, or heavily-laden vehicles. Yet we find that, while Government, Parliament, and the Municipal authorities are insensible to all these inconveniences to commerce and impediments to transit, Railway Companies without regard to cost sweep away hundreds of houses, drive on their lines in spacious avenues of cuttings and bring their trains into the very heart of the Town. It is to be deeply regretted that the Government of the Country is so insensible as to make no effort in stimulating by its example the energy of improvement. What are the active steps yet taken to open the Street from Blackfriars to the Bank? while the London, Dover and Chatham Railway Company have traversed property of frightful value, carried their bridge across Ludgate Hill, in spite of public protests, and erected the most costly buildings. The Government perhaps assumes credit for the progress of its East India Office and the Foreign Office in Downing Street, by Mr. Digby Wyatt and by Mr. Scott; but the Corporation of Liverpool bids fair to out-run it in the erection of the Exchange and pile of Municipal Buildings, by Mr. T. H. Wyatt, which is to cost as much in the outlay. All this is pitiful in the extreme. The din of war in a time of professed peace consumes the millions of the people for iron ships, munitions of offence, and forts on the sea board. Yet a few hundred thousands are grudgingly granted, and too often refused, to promote what more essentially would tend to promote the peaceful well-being of the Nation, and the comfort and enjoyments of the People.

It is with deep concern for the loss of a valued friend and professional brother, that I have to announce the death, during the past week, of our Fellow, Mr. H. E. Goodridge, of Bath, at the age of sixty-eight. He became a Member at a very early period of our Institution, and always felt a deep interest in the progress of art, and in the highest standard of professional reputation. He had the true artistic feeling, and his buildings at Bath display novelty of combination, picturesqueness of outline and chasteness of detail. He was architect for many years to the celebrated Mr. Beckford and erected for him the much admired Lansdowne Tower, under the shade of which the remains both of the original proprietor and his architect now rest. Mr. Beckford, who was very sensitive in his appreciation of whatever was correct and beautiful, always said that this production would ever speak to his architectural talents. I trust that we may be favoured by his son with a full record of the works and life of one, who was respected by all who knew him for his professional and personal worth: of one who had the eye of an architect and the hand of an architect: whose heart was in his work, and who was in every duty of life the man of duty.

It is my painful duty also to notice the death of two gentlemen, who have assisted us in our researches and rendered good service to the Institute by the valuable papers, which they have contributed to our proceedings. I mean Mr. Chas. Harriott Smith and Chas. Winston, Esq. Both of them our Honorary Members, men earnest in the pursuit of science, devoting themselves unreservedly to its developement, and ever ready to communicate the results of their researches frankly to the whole world, without any other object or view than the diffusion of that information, which their laborious investigations had placed within their reach. Mr. Smith was himself a mason and the son of a mason, with a natural love for study, and the desire of fathoming his immediate pursuit, and with a certain ambition he diligently availed himself of means, placed at his disposal by Mr. Bonomi and Mr. Wilkins, R.A., then in the zenith of their reputation, to acquire a mastery of architectural drawing and perspective, as also of geometry. About fifty years ago I formed among my young friends a sketching class, who met in my study, and of whom Mr. Smith was one, with George Bailey, Thos. Lee, John Goldicutt, A. B. Clayton, Mr. Alexander, son of the architect of the West India Docks, and a few others, who composed the association. In 1817 Mr. Smith gained the Gold Medal at the Royal Academy for a design for "A Royal Academy of Painting, Sculpture, and Architecture," due to the neatness of his drawing and the skill of the perspective view, rather than to any high merits of composition: and it is to be observed that he prepared the drawings only in the intervals of business. He took up the study of building stones as a practical and useful subject of investigation, and in order to render himself master of the entire matter of the composition of stones and their place in the crust of the globe, he studied geology in the almost solitary work then written upon it, and acquainted himself with chemistry so far as related to the topic. Hitherto the study of geology had been limited to the theory of stratification, to the systems of Hutton and Werner as to the origin of rocks, the organic remains which they contained, and to the localities in which they were to be found. But as for any practical result, in reference to their application to construction, no special scientific treatise had appeared, and it was not even noticed as an important question by geologists. The fossils embedded in the rocks as an essential part of their structure, revealed records of animal and vegetable creation of countless ages long since past, and so fully enlisted the sympathies of the naturalist and botanist that the uses of the stones were utterly forgotten. Mr. Smith twenty-four years ago read two valuable Papers on lithology, or observations on stone used for building, in which he embodied all the experience of his own practice and the information he had gathered, when as a Commissioner, with Sir Charles Barry, Sir Henry de la Beche, and the geologist of the Isle of Wight—William Smith, Esq., he by the appointment of Government visited the principal quarries of the kingdom, in order to ascertain the best stone to be employed in the erection of the Houses of Parliament, and the results of which were contained in the two editions of the admirable report of the commission, now out of print. Sir Charles Barry earnestly urged upon the Government to have a resident superintendent on the quarries, which were to supply the stone for the Houses of Parliament, in order to ensure none but the best beds, as Sir Christopher Wren had done for St. Paul's: and Sir Charles Barry had intended to have entrusted this duty to Mr. Smith. The Government not feeling the importance of the wise suggestion of the architect, from an injudicious spirit of economy declined the proposal, and the result we all know. To Mr. Smith this Institute is indebted for the admirable series of English building stones in the case at the head of the staircase; and I believe that the last time he was out, he came expressly to see them, as he had kindly consented to superintend their being properly cleaned, in order to render their colour and structure more evident. He had been largely employed by the profession in the architectural carving of some of our principal monuments, University College, the Royal Academy, the Royal Exchange, the capital of the Nelson Column, which he modelled, and in the decorative portions of the Chapels to the City of London Cemetery. He was occasionally an exhibitor at the Royal Academy. I owe much to his advice and assistance in works, where I have had occasion to avail myself of his sound practical knowledge and supervision. His modesty, his unassuming manner, his honesty and straightforwardness, his readiness to communicate what he knew, and his high sense of right and wrong, gained him the confidence and respect of all who knew him. It will be difficult for the Profession and the Institute to replace him, as a trust-worthy counseller and friend, for such men rarely rise up in life to acquire knowledge and use it, not merely for themselves but for others.

The late Mr. Winston was a man of like-mindedness and equal devotion to science as our late friend Mr. C. H. Smith, but being a member of the Bar he had of course a higher intellectual education, and brought a greater capacity to the investigation of glass painting, which he pursued with large views, and with a zeal beyond all praise. Besides his own published volumes our Transactions of 1852, 1853 and 1854 contain many important papers on his favorite pursuit, which are the more valuable as aiding the full knowledge of those processes of manufacture and manipulation, those arrangements and combinations of materials, color, form and setting, which gave to antique glass an as yet unrivalled pre-eminence. His paper on the application of painted glass to buildings in various styles of architecture contains many sound, bold and novel views worthy the attention of the architect, the archæologist and amateur; and particularly his remarks on the proper synchronism of subjects and treatment in painted windows with the style of the building, and which he would wish to be freed from the incorrect drawing, the quaint and distorted figures, the bad taste and deformity of former ages. These essays upon so difficult a subject of investigation, demanding such varied acquaintance with technical details and artistic proprieties, are the more remarkable, as being not at all connected with his professional pursuits, and carried on when engaged in a large legal practice. His facility of drawing was great and his delineations of painted glass admirably rendered the vigor, expression and character of the originals.

It will be agreeable to you to know, that the Library has been refitted at a considerable expense, and the accommodation of cases so much enlarged as to allow of a thorough classification of above two thousand works, and space also for accommodation for considerable additions in future years. The catalogue also is in a forward state of preparation, and only awaits the authoritative decision of the Council, for the printing to be commenced. These operations will cause the expenditure of several hundred pounds, but the confusion in the books had become so inconvenient and intolerable, that it was absolutely necessary to take these steps in order to render available the usefulness of our valuable works to the researches of our members. Few can be conscious how laborious the operation has been, and we are indebted to the peculiar knowledge and unremitting attention of our Fellows, Mr. J. W. Papworth and his brother Mr. Wyatt Papworth for results, which I am sure will prove highly satisfactory to the Institute. We have to recognise the generous and kind interest taken by Mrs. Bunning in our collection, as she has presented to us during the past session, about fifty valuable works from the library of her late respected husband, the City of London Architect.

In connexion with the literary treasures of the library I must call particular attention to the Collection of Drawings which are of importance, as illustrations of the peculiar talents of our deceased Brothers in Architecture, and some of which are precious series from the pencils of such men as Henry Parke, Von Klenze, Achille Le Clere, the Athenian Stuart, C. R. Cockerell, and other eminent Architects. I have the pleasure this evening of presenting twenty-eight drawings by the late Joseph Woods, author of the Letters of an Architect. Mrs. Woods, his sister, allowed me to select them from the portfolios of her Brother for the Institute, and I have chosen such as more clearly proved the judgment with which he selected the best points of view, the strict fidelity with which he rendered each subject, the bold and crisp and tender character of his pencilling, or the effective style of colouring; proving him to have been endowed with the true artistic feeling, and which he had cultivated up to the very last moment of his existence.

I am much gratified also to announce, as I am led to hope, that we may have presented to us some drawings by the late Sir Charles Barry, by which our Members and Friends and future generations will be able to appreciate his great talents as a draughtsman and his genius for design. I learn with pleasure from Mr. Foley that the statue of Sir Charles will be completed and put up in January next, on the landing of one of the Staircases in the House of Commons, on a spot selected by the Committee of subscribers, and approved by H. M. Chief Commissioner of Buildings, the Honorable W. Cowper, M.P.

I need hardly dwell upon the value of such collections of original drawings as those alluded to, nor upon the importance for our Members to avail themselves of every opportunity of adding to it, whether by their own or those of others. All influence should be used with the family or the representatives of deceased architects to get some specimens for the Institute, records honorable to the artist as they must be beneficial to the Institute.

I must not review the ordinary occurrences of the last few months without alluding to events of a more social character amongst us. For the first time since the formation of this Institute, we have had a dinner at the Wellington, in St. James's Street, at which were present, as invited guests, the President and other Members of the Royal Academy; C. H. Gregory, Esq., Member of the Council of Civil Engineers; and J. W. Bazalgette, Esq., Engineer of the Metropolitan Board of Works; Henry Cole, Esq., Director of the Kensington Museum; and Capt. Fowke, the Architect; several of the most eminent builders of the metropolis, and other distinguished men of science. There was also held in these rooms, in June last, the usual soirée, when a numerous and brilliant assembly were gratified by rare and curious objects of art and vertù, brought together for our visitors. At the first the Council had some hesitation as to applying the funds to such a purpose, but the expense was guaranteed by Mr. Tite and myself. This resulted in another instance of the generous munificence of my honoured predecessor, to whose liberality the Institute is already largely indebted, as he insisted upon himself bearing the whole outlay amounting to a considerable sum, in spite of my remonstrances and claim to share the honour. I reserve therefore to myself the privilege of some other opportunity to evince in a like manner my zeal for the Institute.

The accomplished President of the Royal Academy of Arts, Sir C. L. Eastlake, upon the occasion of the annual banquet, to which your President is honoured by an invitation, which usually precedes the opening of the exhibition, and which took place in April last, made a remarkable speech in his usual eloquent language, referring to our art. He considered "that viewed only as an Academical study no pursuit connected with the objects of taste can more fitly recommend itself, as an adjunct to a liberal education"; and he dwelt upon the necessity "of placing within the reach of the many the attainment of a correct knowledge and a power of appreciating well-selected examples and the gradual formation of sound judgment" on the works of the architect. Such words, pronounced by the highest artistic authority, in such a place, and addressed to many ministers of the crown, to our leading senators, and to men devoted to science and literature, proves the importance under a national point of view of the just appreciation of our art and of its productions.

One of the last Meetings of the late Session was occupied by the consideration of the Report brought up by the Committee on Artificial Stone. Some of the results of the Tables offer remarkable inconsistencies, and doubtless it is not months but years of exposure, and only a vast number of samples and of large size that can give reliable results. Few can form an idea of the time and trouble involved in such enquiries, and I doubt much of the expediency for the Institute to enter upon such investigations. It is not reasonable to expect that professional men can afford gratuitously to devote such attention as is necessary for such elaborate experiments, or that the Institute should incur the expense, which in this case might have been considerable, had not Mr. Dines generously placed his premises, appliances and the time of his men at the disposition of the Institute.

According to the wise regulations of our Institute, this being the second year that I have been called upon to fill, however inadequately, the duties of your President, the present is the last occasion on which I shall have to address you thus at length, and to reveal to you all my inmost feelings as to our art in reference to our profession. I trust therefore I may be permitted, without offence and without wounding the susceptibility of others, to confess broadly and distinctly my own impressions of the importance of the study of Classic Art, as a most essential element in the education of the young architect, and I do this at once to vindicate myself and the highest expressions of artistic thought.

There are those, who consider Classical Architecture as an encumbrance to the student in his educational career and therefore ignore it, adopting a more recent class of art without suspecting that they lose much by the omission; and in fact such minds do not lose much by such a conclusion, for the opinions of the learned are to them of little importance. There are others however, who, without absolutely arriving at such a conclusion, still do not place much reliance on classical studies, and they require reasons why, when there are styles of so much more recent date, and more nearly connected with our history and customs, so much deference should be paid to what they call the alien productions of remoter periods, of distant lands, and of such different necessities and habits of living and thought. Let us now consider what the advocates for Classic Architecture may adduce, and how the present style may be improved. All right thinking persons agree, that too much attention cannot be bestowed upon a subject, which is calculated to inculcate purity of taste and high elevation of thought. The necessity is admitted of adopting the best models for the formation of correct notions of the beautiful in art. When any monuments of recent times shall have excelled the works of the Greeks and Romans in the full development of their magnificence and splendour, whether as regards their proportion, grandeur, fitness, and refined ornament; and when any subsequent buildings shall have equally united through as many ages the general reverence of mankind, it will be time to discuss the relative pretensions of the two epochs to be considered supreme, as having embodied the soundest canons of refined taste. The Architects of Greece and Rome lived in periods, when art in those countries was at its culminating point—when men of the most cultivated minds and of the highest intellectual status in such departments were engaged in discussing in the schools the laws of taste and the utmost refinements of thought. They laid down the laws of proportion with exactness. The sister arts of Sculpture and Painting were most refined, and the masterpieces of the highest genius were produced. Neither the one nor the other was obliged to depart from the truthfulness of nature, in order to conform to the arbitrary peculiarities of architecture. Our own eyes see that the works of Phidias, Scopas, Bryaxcis, Timotheus, Leochares, and Pythis were as full of all the just proportions, native grace and artless pose, as if the living subjects themselves had assumed the positions in which the sculpture is grouped, and as if the statues were intended for independent purposes. Those artists worked for an intelligent people, and had not to seek adventitious means to make their works come home to the convictions of the multitude. No contortions of form. No excess of expression. The poetic fancy of the artists had its limit and did not run wild. The sacred edifice did not admit the caricature of sacred subjects, but maintained a tone of feeling and thought removed from every thing that was lowly, familiar and debasing. No masqued efforts in point of construction. It is amazing to think that Classical art, with all the magnificent remains we have of the genius of the ancients still existing, should be put upon its trial in England. It is true, that the monuments are in ruins, that the completeness of their original state with all their appropriate accessories and the maintenance of their actual use in our times do not exist, as in Mediæval buildings; and that the fulness of Greek art is to a degree an abstraction, and can only be appreciated by those, who have lovingly and profoundly studied the subject; and by so far it stands at a disadvantage with more recent phases of taste. But with such a standard of purity as that revealed by the monuments of Attica, of Asia Minor, and of Rome, not to mention the Provinces enriched by the reflex of glory, that sheds its halo on such ruins as those of the South of France, and in Sicily and Pompeii; a school cannot wander far from the true path unless in ignorance it rejects all antique tradition. It must be an impatience of wholesome control, a disregard for sober authority, a wild license of thought and passion for novelty, that would disregard the rich inheritance of the influence of classic taste. To cripple and destroy which is an act of barbarism and folly, an audacious attempt to throw back civilization, a high treason against good sense. For their temples, which are the highest expression of art in any people as being dedicated to the Deity, and coincident with the deepest feelings of devotion in the Heathen mind, were objects worthy the acceptance of the Divinity. They were eminent in conception, choice in every detail, superb in embellishment, calculated to excite feelings of reverence and awe; stupendous as to size, striking as to position.

If we are to ignore the Classic and select the exclusive study of Mediæval art, as the most reasonable and masculine for the mind of youth, which period of Mediævalism are we to adopt? For our present advocates for Gothic architecture, and I speak in the presence of those, who can correct me if I am wrong, are at variance in principle and practice upon this point. The three periods of Classic art shew the progressive advance of taste, an enlargement of the sphere of invention, not an antagonistic process, for each one was perfect and harmonising at the same time with the rest. All these could be adopted at the same time with perfect congruity. But shall we adopt the Byzantine? the Norman? the early Pointed? the decorated Lancet? or the Perpendicular, or Flamboyant? Will either admit a mixture with the other? We are limited to our one style. The Semi-circular will not properly combine with the Pointed. Nor the details of the pre-Norman with those of the subsequent epoch; nor the arch of this with the arch of that period. Where is the just ratio between the base, the shaft and the capital? They are all various. Where the utility, except for show, of the column, elevated in the Classic to the leading majestic feature of a monument, in Mediævalism reduced to mere shafts of decoration? What the laws of contrast between light and shade, when all the mouldings of a clustered shaft or reveal may be rounded off without a square or plane face to act in contrast and relief? Where the beauty of the exterior of buildings without breadth, cut up by the projecting and flying buttresses, evidences of weakness in construction, destroying all unity, quiet and repose, and introducing instead a bustling busy succession of shadows, lines and disconnected parts? What mean those niches with figures therein, following up the sweep of the curved vaulting of a cathedral porch, as if each effigy of solid stone were ready to fall on the head of the worshipper as he entered the sacred edifice? What meant all this magnificence of disposition, that costliness of decoration, that attention to animal luxury and comfort for the residences of men supposed to be devoted to ascetic self-denial? What that affluence of art and material bestowed upon the memorials of monk and nun, abbot and bishop, so flattering to clerical vanity, and which the heathen did not admit.

Doubtless there are many daring flights of science and hardihood of construction, shewing great skill and handicraft. But there is scarcely a cathedral which is not tottering on its legs, displaying rents and crevices, and threatening 'ere long entire ruin, unless timely repaired, after only five or six centuries of existence. Whereas there are the remains of monuments in Italy and Greece and Asia, which have survived the shocks of earthquakes; the barbarous violence of the destroyer, and the wasting havoc of time. Despite of all this, they present lines of columns surmounted by heavy entablatures, standing free and upright as on the day of their erection, and as though in their solitary

Mess. Davey - Long Acre

Mr D is much obliged by Messrs D's prompt attention & requests the favor of 3 proof of the enclosed as early as their convenience will admit. He will soon send the other paragraphs to form the conclusion of the address

28 May 1864

Bolton Gardens R S
20 Dec 62

My dear Sir

I acknowledge with pleasure yr 10/6 contribution to the Testimonial for the Hon Secs of the Art Union who as you justly remark have well earned their reward. Most truly yrs obliged

T. L. Donaldson

Mr W Davey

grandeur they still defied the raging of the tempest, the fury of man, and the natural causes of decay and ruin. We conclude then that it is best for the student not to be exclusive in his taste, for there are elements of grandeur, fitness and elegance in all classes of art and in all periods. But to train the mind to appreciate the truly beautiful, he should select for his early studies the examples most severe in taste and most correct in form, as the best adapted for that purpose. His education therefore should be classical, perfected by a knowledge of all subsequent styles, including the Mediæval; and then he may adopt and exercise safely the one most congenial to his matured taste and experience. For then he will be unprejudiced, the slave of none, the master of all.

In thus frankly stating my views on the relative merits of the two great periods of our art, the Classic and the Mediæval, it is not my purpose to arrogate in practice the exclusive superiority of the one over the other. Each has its peculiar sphere of usefulness and practical application, and that a noble one—in the wants of the present period. Wants as regards taste, wants as regards use. The extreme Classicism is to my own mind as unsuited in many cases to our requirements as the extreme Gothic. Our domestic habits, our public requirements, nay, our religious turn of thought, in God's mercy, happily demand modifications to suit them to the actual and not imaginary state of society. We must not be acting as puppets, and as on an ideal platform play the part of bygone thoughts, feelings and impressions, but work out the honest convictions of the present real stage of life. We may look back, but we cannot go back to the past. I pray you then not to consider me as inculcating partizanship in artistic life. It engenders a rivalry of the lowest kind, it embitters the emulation, which should on the contrary be generous; and it gives rise to enmity between those, who should be friends: and such an unworthy motive-principle of action in a pursuit like ours, must be utterly repugnant to all honorable minds. The character of the profession depends upon the manner in which it is practised by its professors; and its status is fixed by the aims of those, who stand highest in its ranks, and by the mutual respect in which the members hold each other. With noble ideas of art in the abstract, with a devoted love and reverence for the beautiful, all must seek to illustrate these qualities in their productions, irrespective of the applause of the critic or the unenlightened admiration of the public. Uninfluenced by mercenary views, by jealousy, or by selfish ambition, we must be forbearing and just to our brother competitors in the race, and judge them rather by the emanations of their skill and genius, than with reference to ourselves. Under such influences the art becomes of noble growth, healthy, hearty, glowing with generous sentiment, and creating an atmosphere, a living principle, worthy of the best of times, and creditable to those engaged in the pursuit. An honorable profession like ours must be honorably pursued.

Mr. Digby Wyatt, Fellow, said that before separating, they had one duty to perform, the particulars of which he had great pleasure in being allowed to be instrumental in bringing before the meeting. The President had invited them to speak on some of the many interesting topics touched upon in his address. Time scarcely permitted of a response to such an invitation, but he (Mr. Wyatt) was sure there was one sentiment predominant in the minds of all that evening, which certainly ought to find expression—that was a feeling of gratitude for the enthusiasm, kindliness and talent displayed by the President in the address with which he had now favored them. The reasons why that address had found favor with those even who might not agree with all the points advanced in it, were the perfect sincerity and geniality which had characterised it throughout, and the manifestly earnest desire evinced—that their Art should be carried to its acmé, alike in the studies of the members, and in the works they produced; and that whatever branch of study any might individually take up, they should pursue it with the great aim of benefiting and advancing not a section, but the whole body corporate, of the profession to which they had the honor to belong. It was in the President's life-long devotion to such ends that he had, as it were, set his seal upon what he had laid before them that evening. He (Mr. Wyatt) was therefore sure that he expressed the warm and general feelings of the meeting, when he tendered to the President their best thanks for his able and interesting address.

The President said the compliment that had just been paid him was unexpected, for he felt that any effort he made was inadequate to the position he had the honor to hold in this Institute, and the manner in which his address had been received was a sufficient reward for any trouble he had taken in the preparation of it. He was obliged for the tender treatment which had been accorded to the opinions expressed on some points advanced, as they had been, in the presence of members, who he was aware entertained different views to himself on those subjects.

The meeting then adjourned.

A DISCUSSION UPON THE REPORT OF THE ARTISTIC ARCHITECTURAL EDUCATION COMMITTEE,

At the Ordinary General Meeting of the Royal Institute of British Architects, November 21st, 1864,

Ewan Christian, V.P., in the Chair.

Mr. **Ashpitel**, Fellow, said that as Chairman on the occasion when the report was drawn up, it now became his duty, in the place of their respected President, to move that the report be received. In doing so, he would beg to reserve any observations he might have to make till the end of the meeting. He wished them to understand that the only reason the Committee did not come to a conclusion about the school was simply because the matters before them were so many and so comprehensive that they could not get them finished in time. They sat till late, and one by one the members of the Committee dropped off, and so they had to give up the last point, as intimated in the report. If there was a difference of opinion as to whether they should call themselves a School of Decorative Art, or a School of Architectural Decoration, it had not arisen from any disagreement or division amongst themselves, but solely because they had not time to work the matter out. Since the circular had been sent out, he had received a great many suggestions, some of them from the country, with respect to the school. One gentleman, Mr. Gambier Parry, had put the matter exceedingly well. He said that as common paper-hanging, and other similar matters, were decorations, so the paintings in the Sistine Chapel are decorations, though one would not like to *call* them so, but then these latter are *a great deal more*, inasmuch as *art* is a *great deal more than decoration*. It might be as well to throw out to the meeting whether the word "decoration" was not too vague; whether it did not embrace too much, and define too little. It was a word which not merely embraced such ornament as would suffice a builder, employer, or owner, but could be applied to superior work. The desire of the Committee was to make the matter as comprehensive as possible, and he believed it was left with a sort of feeling, first, that they had not time to decide upon it, and secondly, that it would be better left to the entire body of members. This being the case, he hoped the meeting would excuse him if at present he simply rose to move that the report be received.

Professor **Kerr**, Fellow, said he could quite perceive why a school of this particular sort was especially necessary at the present day. This age was eminently *the age of detail*, not merely in architecture, but in all other arts. It was so in painting—he need not refer to circumstantial instances—it was so in sculpture, though perhaps not so much; in poetry, in music, and particularly in literature. This, then, being so, the proposal to further the study of detail without further comprehensiveness was quite a legitimate and philosophical one. With regard to the question as to whether the school should be governed by a joint committee, in which this Institute was to be represented by delegates, together with the Architectural Association and the Museum: this was a serious question for consideration. There was no better friend of the Architectural Association than he was—he could say that without fear of contradiction—but he thought, for the sake of both parties, that body and the Institute ought not to meet on any footing of *quasi* equality. He thought it would be better on the whole if this scheme were managed by a special society like the Museum and the Exhibition. There would be no objection whatever to the committee being started in the manner which was laid down; but he thought it would be objectionable if vacancies were filled up on the principle specified, for the same reason that they had always objected to the so-called Architectural Alliance. The Institute must not allow itself to be considered one of several equal societies. It was the one paramount architectural guild, established for the three kingdoms by Royal Charter, and there was no necessity for any other institution with similar functions. The Architectural Association was a society established entirely for young men, pupils and assistants, and young practitioners. They had done a great deal for themselves and for the profession, and were capable of doing a great deal more in their own way; but he should strongly advise them against combining with this Institute, quite as much as he should advise this Institute against combining with them. Their function was mutual instruction amongst each other; that of this Institute was the supreme supervision of professional affairs. However, no doubt this Institute would give every help to the furtherance of the scheme under discussion; and accordingly, dealing with the question as men of business, what was this school to cost the Institute? It had been rumoured that the Institute was to find the accommodation and the funds for establishing the school, or for providing the appliances. He would willingly contribute as a subscriber, but he hoped the Institute funds would not be encroached upon in any such way. [The CHAIRMAN, Mr. E. Christian, V.P., intimated that no such thing was intended; and referred Mr. Kerr to that portion of the Report under discussion which stated that the funds were to come entirely from the students, and from those who were willing to contribute towards it.] Professor KERR said that this being thoroughly understood he was satisfied, and would say, in conclusion, that he was inclined to agree with Mr. Papworth, that they must not expect too much from this scheme. He did not think, for instance, they would have many of the young gentlemen from the Architectural Association. The subscription was too high for one thing; and, for another, any school of the kind, whatever its merits, would have at first to struggle against this disadvantage, that the young men of the Profession now-a-days were too much inclined to teach rather than to learn; although he hoped this notion, under proper management, would come to an end.

Mr. G. G. SCOTT, Fellow, had thought the President would have taken upon himself to bring this subject before the meeting, but as he was not present, he would offer a few words upon it. He felt, in some measure, bound to speak upon the matter, because, to a certain extent, it might be considered to have originated from a paper which he read before the junior and sister society—the Architectural Association. In the paper which he read before that body, he urged upon them, as the younger members of the profession, to do all they could to promote an improved state of education in the higher branches of art amongst architects, and particularly in the drawing of the human figure, in animal drawing, in, perhaps, the drawing of foliage, though this was of less importance, and in colouring, as applied to architectural decoration. After urging upon them the importance and the necessity of improvement in these matters, he had suggested to them that as it was extremely difficult for each student to obtain the necessary instruction, and of the very best kind, at anything like a reasonable rate, yet he thought it was to be obtained by combination. If a large number combined, they could, by paying at a moderate rate, obtain sufficient funds to secure a proper master or masters to teach them the branches which it was requisite they should understand. He need hardly say that the line of instruction he had been urging upon them was not architectural drawing, because that he held was best taught in an architect's office, and by those other means which architects were constantly making use of, and if anything more now than in former times, by sketching from original examples. The architect learnt his business, so far as it went, in a master's office, and that was the proper way; but there were things which an architect ought to learn which were not distinctly architectural. What he referred to was particularly those branches of art, those points in art, in which the architecture came in direct contact, and united itself, with the sister arts of sculpture and painting. It was those branches for which he thought no proper provision was made in the instruction of young architects, and of which, from constant experience, they would be led more and more strongly to feel the necessity. By the combination which had been suggested, the younger members of the profession would be able to pay for, and obtain the very best instruction in these collateral branches of art. That they would combine for this purpose, he thought, was perfectly certain. He did not think it rested with this Institute to tell them whether they were to do so or not. That very day he had received a letter from Bristol, though not with reference to the subject of the present discussion, telling him that the young architects there were combining and doing for themselves what this school proposed to do. He heard, also, that the Architectural

Association had already begun to carry out this object, and he believed they were to meet on the following day for mutual instruction, under a paid master. So that the question for this Institute was not whether the suggestion would be carried out, for it was clear that it would be, but whether they, as the senior Institute, and as established members of the profession, should take any part in the great work, or whether they should leave the younger members to do it for themselves. For his own part, he thought this Institute had better assist them, though he would not urge that very strongly, because the young students would do it for themselves if they did not come forward to aid them. He thought they might be of great help to them by giving them the sanction of their names, and perhaps by helping them with their funds, and no doubt, now and then, by giving their advice, as well as by other means. At any rate, he thought an Institute like this, representing as it did their profession and art, ought not to let such a movement as this go on without taking part in it. The younger members of the profession invited them to do so, and the Architectural Association had followed it up *pro tempore* while this discussion was going on, still earnestly inviting them to co-operate in the matter. He thought the least they could do was to respond to that invitation. The Institute, through its Council, had already responded, by nominating a joint Committee of this and several other institutions. That joint Committee had met a great many times, and the result of their deliberations had been the Report which had been presented, and which was now laid before the meeting for the sanction of the Institute itself. What he would recommend was, that the Institute should not deny that aid and co-operation which they were positively invited by the architectural students of this country to afford. As regarded the question of the title by which the new school should be known, he did not think he was at the meeting of the joint Committee when that was discussed; but he must confess the title proposed did not express his idea of the school. It should not be called a "School of Architectural Decoration." He did not view it even as a school of architectural drawing. He was puzzled, he confessed, to coin a name for it. It was really a school in which architects might learn those branches of art which were not exactly architectural, but bore strongly upon architecture. It was, as he had said, a point of union between architecture and sculpture and painting. A "School of Art for Architects" was a name he had thought of, and that was, he thought, about as good a name as they could get, though it was not a school for architectural drawing merely. They must not give it a name which implied a school of architecture, but it required a good deal of thought to use those words which would best express their idea. The funds of the Institute were not asked for; but, of course, if they chose to vote a donation now and then, it would be acceptable. The pecuniary help of the Institute had not been asked in any way.

Mr. JOHN W. PAPWORTH, Fellow, then proposed that the Report be returned to the Council, with instructions to nominate the four gentlemen who should act with the President of the Institute in assisting to form the proposed Committee of Management of the new Institution. Having been present at the adoption of the proceedings of the General Committee, and having voted in the minority against the Report as it stood, he ought to say one or two words, in justice to himself, as well as in justice to those gentlemen who brought it forward. He did not think, judging from his own experience, and from what other gentlemen who took a warm interest in the scheme had said, that the proposed school would be very successful; but as he held strongly with Mr. Scott, that no scheme of this sort, presenting the least appearance of success, should fail to be brought forward through any seeming apathy of the older members of the profession, he should be very happy to contribute his mite and time towards its success, and then if it ultimately failed it would not be from his fault. Considering that the Architectural Association, out of which the students would chiefly come, consisted of about 250 members, he supposed he should not be putting the matter too strongly when he calculated that there were not five amongst them who could draw the human figure, and not many more than that who professed to do free-hand drawing at all decently. As officers of that body were present and had not corrected him, he might be asked, "Why should the promoters not expect a transcendant success for this scheme?" His answer was that he thought the Committee had fixed much too large a payment. There was in existence the St. Martin's Metropolitan District School of Art, Castle Street, Long Acre, (no doubt there, as at South Kensington, points in tuition were not altogether in accordance with the feelings of some of the gentlemen who sat on the committee, though, on the other hand, they might be in accordance with the feelings of others), and Drury Lane could not be objected to as an inconvenient neighbourhood, if South Kensington were. There was also another Metropolitan District School of Art in Portland Road, and these two situations were as available for a large number of the students in this profession as Conduit Street for learning free-hand drawing, in light or shadow, from the flat or ornament, figure painting in oil, and the study of the Greek model. For all this only one-half of the fee per annum recommended by the Report was required. Yet he must assume that not even ten of the 250 members of the Association had ever availed themselves of the facilities offered by these two schools. That being the case, he was afraid that equally few would make themselves acquainted with the advantages offered by the new school, and that it would be impossible to drive into the heads of many that the knowledge which this school wished to teach was worth even a guinea per annum. Hence he inferred that there would not be even a partial success. If, however, the money was all thrown away, it would be thrown away in a good cause, and therefore he would hope that the members individually, not the Institute as a body, would assist to carry out the proposal.

Mr. C. F. Hayward (Hon. Sec.) observed that contrary to the ordinary rule, when any special professional subject was brought before the general body of the Institute, only members should be admitted, invitations had been sent on this occasion to many who, though not members, had always taken a special interest in their proceedings, in order that the whole subject of this proposed school should be discussed as widely as possible. For it must be remembered this was not a mere Institute matter, although the Council had taken the greatest interest in it, and used all its influence in bringing it into a practicable form. The attention of the Council was first directed to the subject by a letter from Mr. G. G. Scott, and it was resolved to call a general meeting—denominated the Artistic Education Committee—of members of all the various Architectural Societies, and a most interesting gathering was the result. The Royal Academy was represented by Mr. Hardwick (with Mr. Scott himself), Professor Westmacott, and Mr. E. W. Cooke, who urged the great importance of the study of figure drawing, and other collateral branches of artistic architectural study. Mr. Hope and Mr. Ruskin, on behalf of the Architectural Museum, came to the support of Mr. Scott's plan, and pronounced in favour of it. Mr. Tite, our past President, offered his generous assistance to the President and Council in carrying out the scheme; while the Architectural Association, through its President and other members present, pledged its support if the School were once established on a liberal basis. All assisted in the formation of the scheme now laid before them for adoption. In the management of the new School, it would be observed that the Institute was to be represented only by its President and four gentlemen—not all of them necessarily its own members—while the Architectural Museum and Association were each to send their President and three members, so that scarcely more than a third of the whole body of visitors were to be representatives of the Institute. Thus it would be seen that the matter was one belonging to the Profession generally rather than to the Institute; and that body could therefore neither be held responsible for the failure of the School, nor claim the entire credit of its success. He held, contrary to the opinion which some have expressed, that the Institute should not be an Educational Establishment. Its machinery was not adapted for this, even if desirable, beyond offering facilities for the use of its library, and giving the prizes already established. It was to be considered, he ventured to think, somewhat as a university to examine, not as a college to teach. With the Royal Academy, the Lectures at University College and King's College, and the practical studies in general office work, there were opportunities of self-education, but still there was a want which this School would, he hoped, satisfy, and one which no other existing school seemed to meet. He thought Mr. Scott was quite right in first addressing the members of the Association on this subject, and securing its co-operation and support. For unless this demand had arisen this supply would have been useless; but now he hoped the attention of students would not be divided between two or three schools, but concentrated to make this one a success, or it would be a poor return to those who had taken so much pains to establish it. With regard to the locality, it was to be hoped it would be within this building; and he thought this might perhaps assist to bring about what he felt most desirous to see, viz., the Architectural Museum also within their walls. As Professor Kerr had remarked, a school had just been established by this Architectural Association; and as the President of that body was in the room, he might ask for some information on the point. He (Mr. Hayward) was also informed that at Bristol a school had been established, and now numbered fourteen students. There were four branches of study, superintended by four gentlemen of the Profession and members of this Institute, and he thought great credit was due to the energy of the Architectural Society at Bristol, which had commenced the good work so well. He only hoped other local societies would follow this example. This would make the Institute examinations of especial value, for the immediate object of all this study was to pass these examinations, while the end and object of the examinations was to promote and to test the improvement of Architectural Education. And this fortified his argument, that the Institute should be rather an examining body than an educational one. He (Mr. Hayward) thought they must not forget to do justice to one gentleman (Mr. Burges), who had been the first to suggest to the Association the establishment of a life school, and had supported in the Council of the Institute its application to have one established, though at that time it was not clear how such an idea might be carried out. The working of the plan now submitted to the meeting, he thought, would be satisfactory; and he supposed that should the Report be adopted, it would be only necessary for the Institute and the Association to nominate their members, the Architectural Museum having done so already, and the school might be said to be established. He hoped, therefore, by the commencement of the new year to see it in proper working order. With regard to the general question, he would make but one observation. He had heard with surprise the objection, that as in former days such facilities for study were not obtainable, they were not required now, and, in fact, that now-a-days study was made too easy, and crammed into students rather than sought for by them. This, he thought, was quite a mistake, and for himself, though not enjoying such advantages in his student days, he could only say he should have been glad to have availed himself of them had they existed, and saw no reason why additional opportunities for improvement should not be offered, especially when the demand arose from the students themselves.

Mr. J. H. Christian (President of the Architectural Association), in answer to the observations of the Hon. Secretary, said he would give them some information regarding what the Association had done with respect to this school. They had taken a large room temporarily, well supplied with good casts had appointed an instructor, and they proposed to meet twice a week. He wished it to be understood that this was quite a temporary matter. When he proposed it, as he did somewhat earnestly, to the Association, he clearly stated that it was to be looked upon solely as a temporary arrangement, until the far greater scheme of the Institute was carried out. It was thought possible that it might take some little time to get this scheme into shape; and as young men they were a little eager to get to work. They did not in the least propose to act in antagonism to the Institute—far from it. They looked to the Institute to help them; but the scheme of the Institute being so much larger, they thought no time need be lost in carrying out a small portion of that scheme. Mr. Scott was kind enough to read a paper before the Association bearing mainly on this subject, and whilst he thanked him for it, he would tell him that it had an immense influence upon the members of the Association.

He was certain that if it had not been for that paper no voice of his (Mr. Christian's) would ever have helped the school on. If the school, as proposed by the Institute, were carried out in a form that the junior members could afford to fall in with, he was quite sure their own school would cease absolutely at once, as it would be no more required. However, they intended to carry it on until they had a school that would take its place. Directly that was the case, their independent action in the matter would cease. He must apologise to Mr. Burges for having omitted to mention his name before with gratitude for what he had done for the Association.

MR. MORRIS, Associate, remarked that the initiatory point in this discussion was, the expediency of the proposed school. That should be the foundation stone upon which any argument ought to be raised. He thought that unless it could be clearly shown that architects should know two or three things, each of which required a life-long study to attain, they need not be ashamed of themselves for not knowing them, though the propriety of acquiring that knowledge, as far as possible, was not to be denied. Agreeing with Mr. Hayward and Mr. Scott, he should, when a young man, have embraced with fervour the opportunity of attending a school of this sort; but Mr. Scott (who was not, he perceived, the only Royal Academician in the room) would be aware that if a young man had the leisure and disposition to go into the "Life School" or "Antique School," such had been already established for him,—a school that he might attend without expense to himself, and where he would have the best possible instruction. Censure should not be lightly cast upon the Royal Academy, and he would desire to ask its representatives there present, whether the agencies of that institution could not be so extended as to afford students of architecture who desire to study from life an opportunity of doing so? He had observed the careful recourse to originals adopted by experienced sculptors, even in minor works. He had once applied to an artist for a model of a bull's head, required for the panel of a door. Some would, perhaps, have supposed it only necessary to mention the want to have it instantly supplied; but it was not so. The sculptor did not trust himself to conceive what a bull's head might be till he had it before him, and one was sent from the butcher's shop to the studio. The gentleman employed had devoted his life to sculpture, and did not dabble in architecture or painting. This incident cautioned the student not to wed himself to too many different pursuits. Professor Whewell, when in that room, had spoken of purity in art,—of "pure architecture, pure sculpture, pure painting." These might be very usefully combined; but he thought it should be by the various professors going hand in hand in the same work. In the room there was a model of the Nelson Column, and it reminded him that Mr. Railton did not attempt to model the figure of Nelson; but a statue of the late king, once appealing to public admiration at King's Cross, was, if he rightly remembered, the reputed work of a figure architect. By too much attention to decorative features other important points were neglected.

MR. JENNINGS, Fellow, said he should be one of the last persons to make the slightest objection to anything which tended to increase the education of architects in any form. He had certainly been somewhat disappointed in hearing the particulars of the proposed school for the first time that evening, because he had hoped some step would have been taken toward such an education of architects as would enable them to pass the examinations which had been established. This Institute had taken up that subject: it had determined certain things which ought to be acquired for these architectural examinations, and he had always considered that it would be very desirable they should provide that education in a better form than in the mere architect's office, where only a small number of pupils, if any, had the opportunity of fully preparing themselves to pass their examination. He had hoped, when he heard there was something going forward here in the way of education, that it would include everything that was required for the architectural examinations. What was now proposed appeared to him a very small part of a very large subject; and it would be more creditable for the Institute to take up the whole much more fully at once.

Mr. Henman, Fellow, would be sorry that cold water should be thrown upon this scheme in any shape or way, for he regarded it as one of the most legitimate that had ever been brought before the Institute. This Institute was founded for the promotion of architecture as a fine art, and it could not effect its object more legitimately or extensively than by the formation of a school, which would bring up the younger members of the profession in a manner quite unknown to those who had preceded them, and who never had enjoyed such opportunities. He trusted, therefore, that this scheme would be carried out, and that the Institute would not limit its encouragement as suggested by Mr. Kerr; but, on the contrary, if necessary, even take something from their funds in order to promote it and make it successful. He regretted that suggestion did not seem to meet the view of the Chairman. It appeared to him (Mr. H.) that the establishment of the proposed school was so much a step in the right direction, that the Institute should give it every possible encouragement.

Mr. R. Phèné Spiers, Associate, thought it was the duty of the Institute to assist this scheme as much as possible. In the report made on the Royal Academy some time ago, Mr. Tite, on being called upon to give his evidence said, he thought it was not possible to adopt any system in the Royal Academy which would be sufficiently powerful to give assistance to architects, and he added that this Institute should be charged with their education. Mr. Hayward had observed that the Institute ought only to examine; who then was to teach? Where are to be found the instructors in architecture? If a student entered an architect's office, and was articled there, the architect did not offer to teach him; he might pick up as much as he could. It was not to be supposed that persons could teach themselves entirely by reading books. One of the great drawbacks of their examinations was, that there was no one from whom students could get information on certain points with special reference to the profession. The Institute said they would inaugurate a course of lectures with reference to the examinations, but he had not heard anything more of it. At the last meeting the President, Professor Donaldson, in his Opening Address, made an observation to the effect that he was afraid some of the members of this Institute were forgetting their duty towards their Alma Mater, and giving lectures elsewhere, referring to the five lectures given by Fellows of this Institute to the Association. Those lectures, however, were specially asked for, because the Committee of the Association wished to have a complete scheme of education in the last Session. A voluntary class was established for the practical portion of architecture; and they thought that if, in the Association itself, they could have a series of lectures in relation to history, it would be a good thing. They, therefore, selected different styles, and picked out the men that they thought would best illustrate the particular styles. It was this that the Institute ought to do, and then there would be no need for the Association to usurp the papers of its Fellows. He hoped this new class was part only of a grand scheme, which would be brought before the Institute again, for he considered it most important. There was no doubt that so long as the sole education of an architect was the being in an architect's office, so long the Institute must open its ranks to engineers, and men who had had no architectural education whatever.

Mr. J. W. Papworth said, that Mr. Spiers had done good service by reminding the Institute of the promises made by Mr. Ashpitel and Mr. Kerr, to co-operate in giving a course of lectures, which was to advise the students proposing to offer themselves for the voluntary examinations. Such assistance was certainly asked for, and more fairly than for the help of a good 'coach.' He might add, that the result of the examinations was certainly showing itself, because there was a gentleman who applied the other day to know if there was any recognized 'coach,' as he would not mind putting down his twenty guineas if he thought that he could be crammed sufficiently to pass the examination. Mr. Papworth felt certain that there would never be any royal road which would abridge the amount of labour necessarily to be given by every person who wished to pass the examination that might be prescribed, either in the proposed school or in the professional programme.

Mr. Ashpitel said, that having moved the adoption of the report, he wished to say a few words upon it. He had been seldom more interested or more pleased than he had been by the discussion that had taken place this evening. Although their judgments and opinions were different, yet they all intended to go to the same good end, though by different ways. One gentleman had said that an architect ought to be expected to be an architect only, and that, to a great extent, was very proper. They did not expect him to be a professed sculptor or painter; but every architect necessarily had to do with sculptors and painters, and if he knew nothing about their branches of art, or any other cognate branches which must be parts of his design, how could he hold up his head and meet these men, while conferring on these necessary points upon anything like equal terms? He agreed with Mr. Scott entirely, that the younger men should see work done, and know how it was done. A man who was not a good practical architect must be always "bound in shallows and in difficulties" in all his transactions with the building contractor; while if he knew nothing of art, but was an adept in surveying or measuring, or taking out quantities, he could never be an artistic architect. The architect ought to be master of his whole peculiar profession, and also at least so much a master of the principles of sculpture and painting besides, that he could be respected by those who were professors in those branches. He thought one way in which this could be done was by carrying out the proposition before them. He agreed with Mr. Papworth that they must not expect too much; but he remembered that four years ago in that room it was said to be totally impossible to get up Examinations, that they would not be able to get papers, nor the men to come up. They had shown to the contrary, and their work in this respect was quietly and steadily increasing. Everything they did in the way of advancement of the individual members must improve their status as a body. There was one thing that no one had touched upon that evening, and that was that there were some men in the profession who were not artistic architects, but good surveyors; and if an architect was not a good surveyor he was worth but little. Everyone must respect a good surveyor. But there were also some men, as they all knew, that might be called *art architect brokers*, men who could not design, but who bought their designs from cleverer and poorer men than themselves, and foisted them upon the public as their own. It was not long ago that he received a letter marked "private and confidential," and therefore he could not mention names; but the gist of the letter and the fact communicated in it he might mention. It was this, a certain competition took place some little time ago, and some tolerably golden prizes were given; and this letter went on to say that Mr. A. B. (the writer) was the real man who actually made the designs and drawings, and that he (Mr. A. B.) would be happy to do the same thing for him (Mr. Ashpitel) at any time he wanted, "for a consideration." Now, was that the sort of thing that ought to go on? They knew it did go on every day. He believed in his heart that some men got a large practice, their simple qualification for it being that they had wealthy and influential relations and acquaintances, and they were admirable diners out. Was that the sort of thing that ought to exist? They were complaining every day of a want somewhere. One said they were intruded upon by auctioneers and valuers, another by amateurs and engineers; and there had been a new feature of intrusion lately. He had recently been engaged in cases of railway compensation, when some men who had been builders, who had figured in the Insolvent Court, quietly swore that they were architects and surveyors. Did the remedy lay with this Institute? He thought it did; and that was by working amongst themselves with a good happy feeling, such as he was glad to see prevailed that night. He did not think it right to do more at present than was suggested, nor to ask the Institute for sums of money. If they intended to pile up breastworks of defiance, it was not right at present to ask the Institute to find them in spades and shovels, and the other things necessary for their work. His belief was that if they undertook this matter quietly and steadily, they would find it add wonderfully to the status that this Institute would have in the future, and it was now admitted it had not the position it ought to have.

The motion, moved by Mr. Papworth, and seconded by Mr. Scott, "That the report be referred back to the Council to nominate four gentlemen who shall act with the President in this matter," was then put, and carried unanimously.

The CHAIRMAN, Mr. E. Christian, V.P., having expressed a wish that Mr. Westmacott would address the meeting—

Professor WESTMACOTT, R.A., regretted that the Chairman had drawn him out of his retirement, but having been especially alluded to, from his connection with the Royal Academy, he felt bound to say a few words upon the value he set upon the proposal Mr. Scott had brought before them. He had taken much interest in this matter, and having been placed on the Committee, he had thought a great deal about it. What they appeared to want, as the leading body in architecture, was a school of accessorial art, that is, without defining it as ornamentation or decoration, a school of instruction in all art which was accessorial and useful in architecture. He had no hesitation in saying that, in his opinion, the best foundation for design was the study of the human figure. But there were great difficulties in carrying out a life school, and he should not recommend the Institute to begin at once with a life academy. One of the advantages of studying fine statues was, that by so doing they got the cream of form produced by the ancient sculptors, and grounded upon nature. But the great advantage to the young student was, that in casts the models remained perfectly still, and he might spend a month or a year in making his copy of it, if necessary; whereas, those who understood anything about the living model knew it required considerable power of hand and great quickness of observation to be able to draw accurately and readily from the human figure, which, more or less was constantly moving. There was another objection to a life academy, at first. Those who knew anything about the human figure knew that it was not found, singly, in a state of extreme beauty. In creation it was so, no doubt; but the accidents of life and other circumstances caused it to deteriorate in beauty. The Greeks concentrated their knowledge, which was derived from the study of several examples, into one result or figure. He therefore thought the Royal Academy system of preliminary study was, in this respect, a good one. They did not allow students to go into the Life Academy till they had drawn for some time in the Antique Academy. There the models were of the finest forms, and fixed in one position. Students came to them when and how they liked; the same model was always ready, and found in the same place or attitude. At the same time, nature must be the foundation of everything in art, and the student's course was completed by his attending the school of the living model. He supposed he did not quite understand the *rationale* of an architect's wants, inasmuch as one of the speakers had objected to a sculptor going to study from a real bull, when he (the speaker) had wanted a model of one for some architectural decoration. He thought that was by far the best way of proceeding. Perhaps the gentleman was not aware how extremely difficult it was to copy nature. It was no reflection upon a sculptor, if an architect called upon him to model a bull, to say he had a good general knowledge of the character of a bull, but if he had to model one he would rather go to nature for his copy. If the Institute carried out this object, in which he felt every desire to give them his assistance and advocacy, he would advise them to begin it in a much more modest way than he thought was originally contemplated. He would endeavour to establish examples of all such objects for the student's direction as would be of use to him as accessorial art to architecture, but not so to study them as if the object were to educate him to be a painter or a sculptor. Let such art be studied as accessorial, and no doubt they would find it of the greatest possible advantage in their own practice. He had himself, when a younger man, assisted architects in drawing subjects for pediments and so forth, when mere rough sketches were sufficient; but if he had been called upon to execute the work, he should certainly have gone to nature,—that is, he would have had his real bull to study from. He was no longer practising his profession, but still he was interested in the education of artists, and in watching the progress made in the present day. This, as had been observed by a previous speaker, was essentially—perhaps too much so—an age of detail. They were losing sight of the importance of broad masses and generalization, and this applied not only to architecture but also to other branches of art. They required a larger feeling in art in this country, and there was no grand style. They were literally cutting up art by detail. Every architect, and sculptor, and painter should, of course, understand detail, and know how to draw accurately. Unprofessional people were often heard expressing a wish that they could sketch readily, or to be taught to sketch. Artists knew that no one could sketch till he could draw; and therefore it was not that the working out of this knowledge of detail did not require an immense deal of study. He would begin, then, at the beginning, with the plaster models. Let the Institute get the best they could select, and, further, those more advanced in the profession should not merely put a young man before a model and leave him to draw it, but he should be taught the how and why he is to do it. This was not done sufficiently even in the Royal Academy. The students there were left too much to work out their drawings in the best manner they could. There were certainly artists who in this way had got on in life, and who rather boasted that nobody had given them any instruction, saying they had done everything for themselves, and so on. All he could say to that was, that it would have been better, in very many cases, if they had received the assistance he referred to. He believed a good deal of this was mere conceit of their own powers. He never heard a man of real genius or good sense underrate or cast a reflection upon education of any kind, even if he had not had it himself; and he was sure, for the dignity of art, the better educated artists were, especially in all that concerned their profession, the better their art was likely to be. If the artist was of refined tastes, it would seem necessarily to follow that his art would partake of that refinement. In the architectural profession he had had the good fortune to meet many highly educated men—doubtless there were many who were not so—but he had met educated, scientific, thoughtful men, men from whom he could always learn something. Without meaning anything offensive, it was only justice to say that architects were, as a body, better educated than the general run of artists, and this proposed scheme would still further advance this object among the rising generation. He did hope, then, it would be carried out, and that the Institute would give it their very best support. Whatever tended to the advancement of art should be encouraged. He had a general, catholic feeling about art, and a desire, at the same time, to see English artists taking the position they ought to do; and this project of extending the education of young architects would be one means of assisting them to gain that position.

The CHAIRMAN said he was sorry he should have drawn Mr. Westmacott out against his will, but he thought every member in the room would be obliged to him for having done so.

Mr. WESTMACOTT said he would beg to add one word. Reference had been made to the Royal Academy, as to whether anything could be done in that institution in the shape of such a school for architects as they were here contemplating. It was not for him, as the Professor of Sculpture there, to suggest what might be done; but he could not help thinking that if Mr. Scott would bring the matter properly before the Academy, after some satisfactory plan had been organized, they might be willing to facilitate the study of the collateral branches of architectural art alluded to. But this must be done with a will, and if Mr. Scott would take up the subject, he might rely upon having his (Mr. W.'s) services in helping it forward.

Mr. SCOTT said he had suggested it, but the difficulty seemed to be that what they wanted was thoroughly elementary drawing, and this would introduce to the Academy a set of pupils who would be too young. Mr. Scott then moved, "That it be recommended that the name of the school be the 'School of Art Accessorial to Architecture;' and that the fees be reduced to the sum of one guinea-and-a-half per term, or three guineas per annum."

Mr. [illegible] seconded this motion, and expressed a hope that they would keep to the antique.

The resolution was then agreed to, and the meeting adjourned to the 5th of December.

SOME NOTICE OF OFFICE BUILDINGS IN THE CITY OF LONDON.

By Edward I'Anson, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, Dec. 5th, 1864.

Having been invited by our excellent President to read a paper at this evening's meeting, I have chosen a purely practical subject, with which I have no pretension to be at all better acquainted than many members here present, who could, indeed, do much fuller justice to the subject than I am able to do; but it is a subject, as it were, ready to my hands; and if for the same reason I illustrate it by reference to works which I have myself executed, I trust the meeting will not accuse me of egotism, but will understand that it is because I have the materials ready prepared. My subject is that of City Offices, and my paper will be very brief.

City Offices are certainly a new and striking feature in some parts of the city, and so important have they become in extent, and involving such large financial operations, that during the last twelve months two or three companies at least have been formed for the erection of new offices, or for the purchase and management of offices already formed, one of which, it states, had agreed to purchase property to the extent of £365,000., and whose proposed capital was one million sterling; and when, as I have heard it stated in evidence that one gentleman alone, who is interested in property of this description, is in receipt of an income of £36,000. a-year from offices in which he is interested, and which, indeed, I believe he himself has constructed; when such sums of £50,000. to £60,000. are commonly given for the acquisition of sites, and like sums spent on the erection of single blocks of buildings, you will appreciate the magnitude of the interests concerned, and the importance of some of the buildings which are now erected to subserve the requirements of commerce; and although none of the buildings which I am able to illustrate by the drawings before you are of this magnitude, still in character they are all much the same.

As the mere description of the buildings will not occupy many minutes of your time, I will venture to refer to the growth of this class of building as I recollect it. There were in the City of London, in my recollection, some thirty years ago, certain houses let out in separate floors, and used as offices—but these were few—and it is quite within my recollection when merchants dwelt in the city over their counting-houses, and next to their warehouses, going to their country houses at Edmonton, Tottenham, and Hackney, when there was scarcely any practicable outlet over the river to the southward, and when the coaches and waggons from Kent put up in the High Street of the Borough of Southwark, where the great inns, with the open galleries round them, then existed, and where, indeed, some do still remain, but now converted to other purposes. But in those days buildings erected expressly for offices were not known, and the first building which I remember to have been erected for that special purpose was a stack of office buildings in Clement's Lane, at the end nearest to Lombard Street. They were erected by the late Mr. Voysey, about the year 1823, and although he was a skilful and able man, there was not sufficient professional occupation for him here, and he finished his professional career and his life in Jamaica.

The first building in which I was myself engaged was an office building, forming one of a large block in Moorgate Street, built about the year 1837; but the adjoining buildings were built on the old plan of offices and dwelling-houses over, and although in the course of their erection another of the buildings was built principally for an office, yet, as originally designed, it was for a dwelling-house. Shortly after this period, however, the building of offices increased largely. In 1842 I was engaged in building Royal Exchange Buildings, and some buildings adjoining, for Sir Francis Moon; and these latter buildings, more particularly, were built with special reference to being let as offices, and as a financial operation, it has, I believe, been eminently successful. From about this time the value of office buildings was fully appreciated. Mr. Corbett built some offices in Gracechurch Street, which were very ingeniously contrived as to the lighting and plan; and subsequently the same gentleman, in conjunction with Mr. Richard Bell, built a large and important stack of offices, known as No. 17, Gracechurch Street. By this time the value of this class of property, and the growing demand for the accommodation it afforded, became so considerable that almost all the eligible sites in the City have been converted to this purpose, and now it is well known that there is scarcely a private house left in the City: all are pulled down or converted into offices, and the only residents left are the comparatively few persons who remain in charge of the various buildings and warerooms built for commercial purposes.

In some situations so valuable are the suites of offices that £1000. to £1500. a-year is not an unusual rent for a commodious suite of offices, consisting of six or eight rooms, or even less.

The financial question, indeed, is highly interesting, the value of the ground and the area to which the value is limited; but these subjects, although of considerable interest, are so little akin to the architectural portion of the subject, that I forbear to dwell longer on them here.

It may not be uninteresting to advert, in passing, to the distinct character of certain localities, the separate centres of commerce or markets into which the City is divided. One of the first important trades in the City is that of the Manchester warehousemen, and even now these establishments exceed in magnitude any others with which I am acquainted. The enormous extent of such warehouses as those of Messrs. Leaf, of Old Change, Messrs. Pawson, St. Paul's Churchyard, of Messrs. Cook, in the same locality, can hardly be imagined by those who have never had occasion to visit them. Wood Street was the centre of this market. Watling Street contained some important houses, but since the formation of New Cannon Street, this street has somewhat declined in importance, and the market now extends as far west as St. Paul's Churchyard, and as far to the North East as Cripplegate. Mincing Lane has long been the centre of the Colonial Market, the Sale Rooms used by the brokers having been built there by the late Mr. Joseph Wood early in this century, but it is within the last twenty years that the great increase of this market has taken place.

One of the first modern office buildings erected in Mincing Lane was built under the direction of the late Mr. Arthur Green, about the year 1845-6, and now Mincing Lane presents a street of palaces, all being offices in the use of the colonial merchants and brokers; and even the noble entrance to the Clothworkers' Hall, built by our able and esteemed Fellow, Mr. Angell, is, as to the portion next the lane, used for commercial purposes, the fine hall itself lying back, and eastward of the street.

No property in London has advanced more in value than the whole locality affected by the Colonial trade, which includes Fenchurch Street, and extends from Billiter Street on the East, to Philpot Lane on the West. Mark Lane is the centre of the wine trade. This is a trade, the requirements of which, notwithstanding our free trades in French wines, does not appear to have materially increased.

The Corn Exchange, situate in the same street, also determines the position of several important houses connected with the corn trade, but that trade also has not required any considerable extent of new offices. Mr. George Smith, about 1825, built a new market in connection with the old one, and I have since added some chambers at the back of the old Corn Exchange, next Seething Lane.

There is another centre for general merchants in Broad Street, Austinfriars, and Bishopsgate Street; the tendency, however, certainly is rather to draw towards Mincing Lane, which seems the great centre of commercial activity.

There is a distinct centre of activity for the iron trade, in the neighbourhood of Thames Street. One for the money market, in the neighbourhood of the Bank. One for the hop trade, in High Street, Borough. There are other subordinate centres of commercial activity, but the great nucleus lies between the Bank and Mincing Lane.

The important thoroughfare of Cornhill and Cheapside is greatly affected by the large public companies and insurance offices, who are fast buying out all retail shopkeepers who cannot compete with the great interests by whom they are superseded.

The operation of the Limited Liability Act has tended greatly to increase the demand for sites for such offices; and I think it may be safely prophesied that another half century or less will see the great thoroughfare from the Bank to St. Paul's a line of public offices: and there are already strong indications that the same result will ensue, and at a much earlier period, with the new street which is about to be formed from the Mansion House to Earl Street, Blackfriars, a very important line of communication, the management of which is with the Metropolitan Board of Works.

I now, however, proceed to refer more particularly to a few examples of the Office Building Class, of which I am enabled to exhibit to you the plans. One is a building known as Langbourne Chambers, Fenchurch Street, very recently erected; the architect is Mr. James Sheppard Scott. It has simply an entrance from the street, so that externally it has no architectural feature. It had also extremely limited opportunities of obtaining light through its boundary walls; wherever this opportunity did exist it has been taken advantage of to the utmost extent, but the chief light is obtained by the internal areas formed within the block of the building, these areas being all lined with white tiles; and on the ground floor there is an ingenious contrivance for obtaining an extension of skylight by splaying back the walls of the areas above the skylight level.

There is another plan of offices built next adjoining to one of the ancient churches in the City, St. Helen's, Bishopsgate Street, a stack of offices built by Mr. C. J. Corbett, an architect I have before referred to, who has built largely, and principally on his own account.

I may here mention, incidentally, some somewhat curious points of practice which arose out of the building of this stack of offices, and in which, as being professionally concerned for the freeholder, I became a party. One was, that when the old buildings adjoining the Church were removed, it was found that a window belonging to the Church had been bricked up since the Reformation, and the parish demanded as a right that, notwithstanding the length of time during which the window had been closed, that the Church should re-obtain its ancient light, asserting that no time was a bar to the rights of the Church. Another point which arose was, whether the owner of the adjoining house, which had been pulled down, and which, since the Reformation, had used the Church wall as a party wall, had a right in respect of this wall to use it as an ordinary party wall, and to deal with it under an ordinary party wall notice under the Building Act, and Chancery proceedings were actually begun to determine the rights of the respective owners, but they were subsequently compromised, each party making concessions, so that the rights of the contending parties were never legally determined, but by one concession made, the Church regained its ancient window, after it had been closed some three hundred years.

Another set of chambers, the drawings of which I am enabled to submit to you more *in extenso*, are those of Colonial Chambers, Fenchurch Street. This building is almost wholly lit by internal areas, and except toward the street has no external windows at all. The cost of this building came to very nearly 10*d*. per foot cube. The areas are all lined with white tiles, and the front next the street is a stone front. The entrance door next the street is an open iron door, a feature which I have introduced in most of my office buildings, as I think it serves by night and by day to admit air and ventilation to the halls, passages and staircases.

In like detail I exhibit to you the drawings of Bell Court, Mincing Lane. This, unlike the last building, is wholly lit from its external walls, and the lights, where not obtained over areas already existing, were obtained by arrangement with adjoining owners. The cost of this building comes out at about 5½*d.* per foot cube. It has a narrow frontage on the street of stone, and, like that last described, this also has a stone front, but this is exclusive of ironwork and some other matters. Also the drawings of a building built for the Colonial Life Assurance Office, Lombard Street, but which has recently changed hands, and is now used for a bank. Digressing again from the subject more immediately under our consideration, I may mention that this building, or rather the site on which it stands, has been quoted as an instance of the great value of property in certain localities. The area it covers exceeded but little 1000 feet, and the ground it was stated was sold at the sum of £30,000., but this is an exceptional instance, quoted to prove an argument, and can hardly be taken as a criterion of value. The adjoining building in Lombard Street has also the upper part used as offices, but the area of the ground was here so limited that it hardly afforded an opportunity for any special adaptation as an office building.

Lastly, I submit for your inspection the plans of the offices over the Subscription Room at the back of the old Corn Exchange, Seething Lane. The plan of these rooms was wholly determined by the arrangement of the floor below, the room or offices above being subsidiary, the main object of the building having been the subscription room on the ground floor.

The four last illustrations are of my own buildings, but the two first described of these more particularly illustrate the special subject of office building. Other more perfect plans might probably be found, but as I before mentioned I have these materials ready to my hand, and subject to the general observations I have to offer as to this class of buildings, and a reference to the plans before you, will render further enlargement on the details unnecessary.

In planning this class of buildings, the distribution which it is most desirable to accomplish is one which admits of a separate access to each room. The rooms are seldom formed of large size, seldom more than 20 by 15, and often considerably smaller, and even when the rooms are constructed of larger size, they are generally so arranged with fire-places, entrances, and windows, as to be capable of being divided into smaller rooms; the position of the fire-place is not important, for it is not used for sitting round, but simply for warming the room; it is very generally placed, when the plan admits, at the back of the room, away from the window, and, at all events, it is so placed that between it and the window there shall be abundant working room for a desk, the great object being to utilize, as much as possible, the space opposite the window. One of the most important points is to consider what is the minimum amount of space which it may be necessary to sacrifice for obtaining light and air to the various rooms. I recollect one instance where there is an area or shaft of three or four stories in height, lighting offices on both sides, not exceeding 7 feet in width, but I have myself sought to obtain a width of 10 or 12 feet; and as these areas are now invariably lined with glazed white tile, I have found this width to be fully sufficient, even for lighting rooms in the basement stories, which I have done successfully at Colonial Chambers, Fenchurch Street; and in this case to obtain a light reflected upwards, I have splayed the lower part of the sides outwards.

A large amount of window space being of the first importance, it is desirable to economize, as much as possible, the bulk of the window frames; this has, in some instances, led to the adoption of single sashes, occupying the whole opening, which allows a frame of less depth than when the sashes are double hung. These large sashes are hung to turn on centres, but the same disadvantage attaches to them as to casements, namely, that in opening they derange the desk or table which is placed against the window. With the view of reducing the size of the frames, I have always made a part of the sash only to hang, but as constant window cleaning is an important feature in the management of these establishments, I have always worked projecting iron brackets into the area walls, at convenient distances, whereon planks may be placed for the purpose of repair or cleaning. In forming the window I have generally placed the head above the level of the floor above, and in some cases I have formed bulk heads in the floor above, at the height of a desk, and splayed the ceiling below up to the under side of the desk above, being desirous of obtaining light as much as possible from the upper part of the rooms.

I have already alluded to the use of white tiles for lining the walls of the areas; this gives a very great advantage, not only in reflecting light, but the appearance is also pleasing, and it is very easily cleansed; every shower, in fact, helps to do this. They were first used by me at the suggestion of Sir Francis Moon, at Royal Exchange Buildings, and this, so far as I know, is the first instance of their application on a scale of any magnitude in City buildings. It is obvious that they may be made hexagonal in form, or square or diamond shaped, and ornamental borders might be introduced, but this I have never seen done, as the great object is to obtain, to as great an extent as possible, the best reflection of pure light. I have carried out this principle not only in internal areas, but also in two instances in the narrow passages in the City, one of which is Pope's Head Alley, leading from Lombard Street to Cornhill, where, having the control of the houses on both sides of the way, I was enabled to obtain the lining of the opposite walls; and another instance is the back of the building in Finch Lane, built for the Middlesex Bank, which abuts on a narrow court, and being opposite to a house in which I was professionally interested, I obtained that the back of the bank should be covered with white glazed tiles.

The staircases and landings are almost always of stone, and fire-proof. At the Middlesex Bank just alluded to, the staircase is of terra-cotta; the finishing and decoration are very simple. The chimney pieces are also generally very economical in character, and indeed I have sometimes thought in some of the finest and most profitable buildings of this class, that the chimney pieces have been treated with too rigid an economy.

The outer doors to the office are generally made in solid frames, as they are constantly being used, and the frames are generally carried up so as to form a fanlight over the door, in which there is a swing sash, fixed to open on centres, for the purpose of admitting air into the rooms from the spacious landings and staircases with which they communicate. And the door itself is usually a glazed door, which admits of placing the name conspicuously on the door, and at the same time gives light to the passages. I need hardly say that a most extensive use of plate glass is made, both in the windows and screens; and it is remarkable how little sound passes from one room to another when separated with screens glazed with plate glass.

Another obvious necessity is a good supply of water-closets, wash-hand basins, and urinals. Sometimes it is necessary to devote special rooms for this purpose, grouping the closets together in the less valuable part of the house, as the basement and upper floors. In the Colonial Chambers, which contains fifty-two rooms, I have provided twenty water-closets, and in Bell Yard Chambers, containing sixty rooms, there are about twenty water closets, besides urinals and wash-hand basins in both cases; and I need hardly say that the cisterns must be of large size. In Langbourne Chambers, the architect has contrived an arrangement of pipes passing at the back of the fire-places, so as to procure a supply of warm water for the use of the offices.

And now, to conclude, I beg to refer to some points of practice incidental to this class of building. One of the greatest difficulties which arises in building, not only office buildings, but indeed all descriptions of buildings in the city, is the serious difficulty which arises out of questions of light and air. The question suggests itself out of the subject of this paper; it is one which merits the careful attention of this Institute; and although I am not prepared to offer any suggestions which would meet or mitigate the difficulties constantly arising out of the existing state of the law, I cannot but think that some course of proceeding might be adopted which would be an advantageous substitute for the law as it now exists. The only practicable course open to any aggrieved party, as the law not stands, if any adjoining owner has erected a building to his prejudice, is to bring an action for the damage done. This is always an expensive and troublesome mode of proceeding, and in the great and rational sympathy which exists in favour of the owner of a new and probably much improved building, and the extreme difficulty of proving to a third party who was not cognizant of the state of things which existed before the claimant's lights were affected, it is hardly possible to obtain anything more than a nominal damage for the injury sustained. This has led to the frequent occurrence of applying for an injunction to prevent buildings being erected; and such a mode of proceeding has the very great advantage that it obliges the aggressor to justify his proceedings before he proceeds to raise his building, and before his case is strengthened by the prestige it acquires by the erection of his new building. An injunction is, however, often obtained upon very slight grounds, and when the interests of the objecting party, although actually affected, are comparatively extremely small in comparison with the interests of the party accused as the aggressor. So that, as I have before suggested, it would be most desirable that some better means should exist for solving this social difficulty, for I think it must be admitted that there is often considerable hardship in the law as it stands; and it is clear that if it were in all cases carried out, the houses of London must remain for generations unaltered in height,—a condition which would alike be detrimental to architectural effect, and a very serious drawback to the value of property, completely negativing the theory that a freehold extends from the centre of the earth even to the heavens.

The case which, on account of the thorough manner in which it was worked out, became a standard authority was the case of the Merchant Taylors' Company against Truscott, and a particular interest attaches to this case, from its having been the first in which it was decided that a custom which by long use had grown into the authority of law, namely, the custom which, until this case was tried, allowed all persons building on old foundations in the City of London to carry their buildings to any height they pleased, then no longer existed. This was a custom never directly repealed by any Act of Parliament, but it was held in this cause, by reason of the Act of the 71st chapter of the 2nd and 3rd George IV, an act for shortening the time of prescription in certain cases, to have been abolished. The injunction to restrain the defendants was sought for before the Master of the Rolls, who held that there was a *primâ facie* case for restraining the defendants in the execution of their work. Nevertheless, an account was taken of the condition of the building at the time; and an action at Common Law, the Court of Chancery not being then capable of hearing evidence, was directed to be tried, to prove the fact whether there was damage done to the light and air of plaintiffs' building or not. This cause was accordingly tried at the Court of Queen's Bench at the Guildhall, when the fact of a damage was clearly established; whereupon it went back to the Master of the Rolls for a decree; but as there had been some deviation from the old line of building frontage, the building having been somewhat set back, the Master of the Rolls appointed an eminent surveyor to advise him as to the extent to which the defendant's building should be pulled down so as to restore to the plaintiffs the same light and air as they formerly had, and the decree was made in conformity with the surveyor's report. The plaintiffs therefore obtained all the satisfaction which the Court could afford them, but it subsequently became a matter of compromise, and a compensation was accepted for the damage done. I believe that there are still erroneous notions prevailing on the subject: one is that the intervention of a street or public way justifies the raising of a building to any extent; another is that a building may be raised, provided the raising is not to a height beyond a line drawn at an angle of 45 degrees from the window opening or openings, the light of which is affected by the raising of an adjoining building; another is that sky lights or horizontal roof lights are not subject to the same law as ordinary vertical windows. All these are purely fallacious, and however distant the obstruction, or however brought about, if an ancient light, that is, a light which has existed twenty years, is injuriously affected by reason of the works of an adjoining owner, there is a cause of action.

There is, however, a quite recent case, arising out of the rebuilding of the noble pile of office buildings on the site of the old East India House, when, on appeal to the Lord Chancellor, there was a judgment given, I believe, of a character more favourable to those engaged in erecting new buildings, to which I am only able to refer, without giving the actual details of the case.

Besides the difficulty arising out of the state of the law, with which all who build in London are probably but too familiar, we have difficulties arising out of the special Act which regulates Metropolitan buildings, namely, the Building Act,—one which is pretty sure to require attention is that section of the Act which prevents our forming openings in an external wall exceeding one-half the area of the wall; and when you look at such a façade as that of Colonial Chambers, it would at first sight appear that the Act had been contravened, but if you reckon up all the space below ground, in which no openings occur, there is enough to justify the building as it stands, and in fact it seldom happens that this is the serious difficulty which it at first appears to be. Another restriction which creates a difficulty is the limitation of the contents to the number of cubic feet which the Act allows. This I have felt it necessary to provide for in my own buildings, by dividing the building by brick walls and double iron doors, so as to form it in compartments not exceeding the required cubical capacity; but in one of the largest of the city office buildings erected in Mincing Lane, where the division was not thus carried out, the matter was brought before the late Mr. William Cubitt, who was then, as Lord Mayor, the sitting magistrate, and in consideration of the building being built with fire-proof floors the division by vertical walls so as to obtain the required area was not insisted on.

There is still another practical point, but of a totally different character, to which I beg to refer you; for one element of success in these office buildings is a good organization of such services as the offices require, which, although limited, require careful and regular attention. With a view to ensure this it is usual to have a short code of printed regulations, which form a part of every agreement under which the separate offices are held. In one building, the internal organization of which is well known to me, it is stipulated that a certain sum shall be paid, in addition to the rent for each room, for the office cleaning and for coals; that the painting be renewed at fixed intervals, and that the charge for painting the passages and staircase be distributed among the tenants; that all window cleaning shall also be done by the owner at fixed periods and charged to the tenants; that all external blinds are renewed at stated periods at the tenants' expense; that no name board or plate or other marks are set up on the building, except with the owner's consent. The owner also provides, at the tenants' expense, a porter in plain livery, who acts as door keeper. All these arrangements ensure a uniformity of appearance, and maintain a cleanliness and good order in the establishment, which has its value to the tenants as well as to the owner, and prevents the confusion, which would be inevitable in large establishments, if separate office cleaners, &c. were allowed, and separate coal stores kept.

The PRESIDENT said there were many gentlemen present connected with these operations in the City, to whom Mr. I'Anson's paper must have been highly interesting, and whose knowledge might add still further to the very valuable notes which had already been communicated to this meeting. He therefore hoped gentlemen professionally connected with the City would favour the Institute with the results of their experience.

PROFESSOR KERR said, the practical points to which Mr. I'Anson had referred were some of them of particular importance. For instance, the question of light and air, according to the present state of the law, was one to which it would be well to turn the attention of the Institute. Nothing was more unjust than the law of light and air as it stood. He was afraid Mr. I'Anson took the side of the neighbour whose light was supposed to be injured; he (Mr. Kerr) took the side of the owner who was supposed to injure it. Primarily an owner was allowed to build as he pleased on his own ground; but if his neighbour had established an "easement" which was thus injured, (the easement in this case being a right of receiving light over adjoining property), then he thought the law ought to lean, not towards him who by accident, or a neighbour's inadvertency, had acquired the easement, but towards him who owned the property, and who now required to use it in a particular way.* The difficulty might, he thought, be met in a great measure by a law to this effect—that the owner of the ground should be able to build as pleased himself, provided he paid damages for any injury to a neighbour's easements, such damages, however, to be assessed by a competent jury, on intelligent and equitable grounds.† The law, as at present interpreted, permitted the neighbour, by injunction from the Court of Chancery, to prevent the owner from proceeding with his building; and as Mr. I'Anson and many others knew, the immense expenses involved in the Chancery suits, sometimes instituted on the most frivolous pretences, were such as to form a very serious disadvantage in respect of any improvement in the best class of London buildings. Then again, not only did this question affect the private right of owners, but it actually affected the interests of the public, because the commerce of London depended very much on the question whether London was to consist of houses 40 feet in height, or of 50 or 60 feet. Another point raised by the lecturer was the application of the Building Act, and this led him to suggest what he had often already proposed in other quarters, viz. that it was most important that in the expected new Building Act the Board of Works should be entrusted with discretionary powers to a wider extent than was now the case. At present they could only deal with questions which are not settled by the Act, but he held that the Board of Works ought to be allowed to sanction a deviation from the strict reading of the Act, whenever exceptional cases practically required it. That would tend to the advantage of the public as compared with the present system, under which the district surveyor must enforce the law, however oppressively, according to the interpretation of magistrates and lawyers, and the Board of Works, if appealed to, could only say, it had no jurisdiction—no authority even to sanction a practical necessity. In Manchester and Liverpool, he believed, or some other such large provincial cities, the local Board of Works had all the discretionary power he suggested; and surely there could be found some stronger reasons why, in the complexities of London building, the Board of Works of the Metropolis should have the same. He had great pleasure in proposing a vote of thanks to Mr. I'Anson for his eminently practical paper, which, he hoped, would be but one of a series of such papers, which gentlemen would not hesitate to offer in reference to their own works, for there was nothing from which they could obtain greater benefit than communicating to each other the results of practical experience.

Mr. ARTHUR ASHPITEL, Fellow, would enter his protest against the theory that an owner of ground, possessed of money, should be allowed to build and destroy his neighbour's light or property by simply paying him out and getting rid of him. It was a tyranny that would never be endured in any part of the world. The crowding together of buildings and offices, and lighting places with little holes or wells of 7 feet diameter, must be extremely prejudicial to the public health. The law, as he understood it, was this, founded on the old Roman legal maxim, "*Utere tuo ut nemini non lædas*," and was also in accordance with a much higher law, which said, "do to others as you would they should do unto you." That the best laws might be perverted they knew; that frivolous actions and suits would be brought they knew; but those who had had City practice knew that the most daring things were sometimes done there that could possibly be conceived. He had known cases in which fifty men were set to work at night with torches, to carry up a wall which blocked the light of adjacent building, that the neighbour might not be able to avail himself of the power of a Chancery injunction; and redress from a flagrant wrong could only be obtained by protracted and expensive action, to get the dry value of the property before the injury was inflicted. He hoped this Institute would never sanction anything of the sort. With regard to the law on these matters, they knew what law was in all cases. It was an intricate piece of machinery, and was the same in every part of the world. Where they laid down abstract principles the most, they did the greatest injustice. The justice of the case was simply this, "make the best of your property, so that you do not thereby hurt your neighbours;" and if they could tell him a better law than that, as between man and man, he should be very glad to hear it to-night. With regard to the City offices, Mr. I'Anson had omitted to mention two large instances, the Gresham House, and the extensive works that had been carried out on the site of the old India House; he had also omitted some large works of the kind carried out by his friend Mr. Whichcord. The great fault, as it appeared to him in the majority of these structures, was that the courts or spaces left for light and air were, in most instances, too narrow. The great fault in Gresham House was that the areas ran through the middle of the building. Those rooms to the south of the central corridors were pretty well lighted, but those to the north were overshadowed by that part of the building. They got no light except from the north, and that only in small quantity, owing to the houses on the other side. It struck him in these large buildings, some of which he had laid out, one great thing was to make all the openings to the south, and to get as much light pouring down through the opening as they possibly could: also to keep the corridors on the north side as much as they could. There was a peculiar feature in the India House buildings, where the openings were made streets as it were. They were not covered over, but had open courts; each block of buildings having its own front door, and its own staircase. In that way they came back to the original plan of laying out these properties. He believed this sort of rage for constructing offices had taken place again and again in the City of London, and depended very much on the state of trade. He had heard of great financial reverses having been experienced in these speculations. Years ago extensive office premises were built or converted by the well known Hercules Painter; but times changed, rents went down, and the man was nearly ruined. In another instance, one Moxhay, originally a hatter, having amassed a large property, went into immense speculations, built and converted offices in all directions; the panic of 1845 came, things went down, and he died almost penniless. He was aware that the value of property of this description had greatly enhanced in the present day. It depended on the state of trade. A man did not care to a few pounds what rent he paid for his counting-house in the City so long as he made large returns from his business. But rainy days might come. They might have to contend with pecuniary difficulties at home and on the continent. There were many causes affecting trade, and in such events he thought these speculations would suffer very severely, There was one thing worthy of remark, that was the great cost at which these buildings were constructed. When they hear of 8½d. and 10½d. per cube foot, it appeared to him very extravagant. compared with what was done in other places. He knew there was great grumbling when the Royal Exchange was estimated to cost 11d. He had great pleasure in seconding the vote of thanks to Mr.

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* *A Definition of an Easement.* Slip your hand into your neighbour's pocket without his knowledge; contrive, by whatever means, to keep it there without his knowledge for twenty years, and you may keep it there for ever after in defiance of him.—*R. K.*

† Since the meeting I am told that the Court of Chancery has begun to take this very view of the question.—*R. K.*

I'Anson. He thought these were amongst the most useful papers that came before the Institute, in which they were told in simple language what a man had done, and what his experience had been. Such papers, perhaps, possessed more practical value than more showy, more learned, and more refined communications.

Professor KERR, after remarking that 10½d. per foot cube was rather a low than a high price, and that the standard was about 1s. a foot, begged permission to ask a practical question. A few years ago he had come to the conclusion that in the City the site and the building put upon it were about equal in value. He should be glad to hear from Mr. I'Anson how the relative values stand at the present time.

The PRESIDENT remarked, that in the case of a small plot of land fetching £115,000., and re-sold for £130,000., he would ask how they could put a like amount in the shape of a building upon that site?

Mr. I'ANSON said in the case of the Colonial Chambers, Lombard Street, the price of the land, as quoted, was exceptional, and might be considered a fictitious value, viz., £30,000., and £500. a-year ground rent, while the building upon it did not cost more than £5000. He gave evidence in a recent case relative to property in Cannon Street, belonging to the late Lord Mayor, in which the claim was about £50,000., and the value of the buildings was not above £6000. or £7000. With regard to what had fallen from Mr. Ashpitel, his own opinion was, that for a cycle of years the value of this description of property was increasing. There might be a season of depression, but for a cycle of eight or ten years he was decidedly of opinion the value of this property was enhanced. The value of land in the City had, in some parts, trebled within the last few years, until it had increased beyond all proportion to that of the buildings placed upon it.

Mr. ASHPITEL remarked that a company for financial purposes had started, and they were going into banking and money lending, and proposed to begin with £3,000,000. capital. They must have showy premises to attract attention. They must have palaces to draw in the public, and they did not care what they paid. £100,000., more or less, for a site, was nothing in starting such a scheme, compared to the profits expected to be made by the show. But suppose such a panic arose among the banks as came on them in 1825, what would become of the high prices? He had known properties which had gained cent. per cent. in a few years. In a house which would hardly produce sixty guineas, the ground floor alone now was let for £100. In other instances he could name property let for £180., had dropped to £25., and now had risen to £220.

Mr. F. W. PORTER, Fellow, remarked, in the case referred to, after the land was purchased it was mortgaged for £100,000., and the parties were to receive £50,000. more when the building was completed. Thus the Company would purchase the site and erect the building, without putting their hand into their pockets for a farthing of money.

Mr. J. J. COLE, Fellow, would mention, on the subject of the enhanced value of land in the City, that he had lately entered into an agreement to sell some land in Throgmorton Street at a price equal to about £15. per foot, the same land having been bought in 1854 at £4. per foot. The Auction Mart land was, he believed, sold at £19. per square foot for the freehold. £17. per foot, he understood, was the price of a small part within the Mart, which was parish property. These were instances of the enhanced value within the last ten years. He did not find that rents were equally increasing, although they were high. These large prices for freeholds were given by companies started to acquire sites for building banking houses, not offices. High prices were not generally given for land for office buildings. The rates at which offices in and near the Stock Exchange were let were about nine shillings per foot for the ground floor, seven shillings for the first floor, and five shillings for the second floor; the third floor at three shillings was not generally considered profitable. For the sake of architectural London they might carry up high buildings, but beyond a certain limit they were not profitable to the owners. [The PRESIDENT remarked that at nine shillings per square foot, the rent of an office 20 by 20 would be £180. a year! Mr. J. W. PAPWORTH confirmed what Mr. Cole said.] Mr. COLE continued, that a first floor office, 20 by 15 feet, has been let since 1854 at £120. His own offices were charged at similar rates. At the same time it behoved all to try and keep down the increasing value of land, because they sometimes wanted to be buyers as well as sellers. He had sold half of the site of a party wall in Throgmorton Street at the price he had mentioned; but he wanted to buy a house in that street, and the owner would not even give him a figure; therefore they must look to what might happen to them as buyers. On the question of light he would refer to a point which had not been touched on. Supposing an old building, having twelve lights, were pulled down, and reinstated by a building with twenty lights, or carried up to a height to admit of those additional lights: the buildings adjoining that pulled down became damaged to the extent of the additional lights acquiring a right over them. It was there they wanted some right of action. They had it for *obstruction* to light; but the injury he alluded to was occasioned by the new building so *acquiring additional rights* of light. Twenty years, which gave this right, soon pass away. Recently in the City there stood a building near the Stock Exchange, which had very few back windows. It was rebuilt with many windows. He asked the architect to enter into an agreement that he would not thereby acquire more right of light; but he asked in vain. He (Mr. Cole) therefore began to raise on the Stock Exchange a wall, 32 feet in height, against the new windows. It was required to be pulled down, but it was not; and he had no other resource for protecting the Stock Exchange, because the law did not give him an injunction against any one acquiring a right of light for more windows than were had before. On a point of practice, he would ask Mr. I'Anson whether he had not found an objection to the introduction of large surfaces of plate glass, in what was familiarly known as "the banker's draught?" The warm air was condensed and fell, and there was no persuading the clerks that it was not a veritable draught. He thought so much glass an evil in that respect. In the construction of division walls in offices it was desirable not to build them from bottom to top, as usually done, but to insert in every wall iron girders in the depth of each floor, which would allow of thinner walls; and it might happen before the building was finished that a tenant offered himself who required this or that wall swept away, and by the use of such girders these requirements might be met by taking down walls and making good the floors and ceilings in a day.

Mr. WYATT PAPWORTH, Fellow, wished to be informed whether or not the areas were covered at the top in the instances referred to by Mr. I'Anson, as he had seen some offices where the area was enclosed at the top, leaving an open space between the skylight and the parapets for ventilation. If this covering be not adopted, he then would ask how the tiles on the walls were secured; whether they were merely kept in place by cement; for damp getting behind them might, in the latter case, cause them to drop and smash the skylights over the ground floor offices, perhaps to the injury of some one in the room.

Mr. I'ANSON replied he had never covered the areas with skylights. Care was required in fixing the tiles. He had fixed them in Portland cement, and they had stood many years. It is better to fix when the wall is perfectly dry.

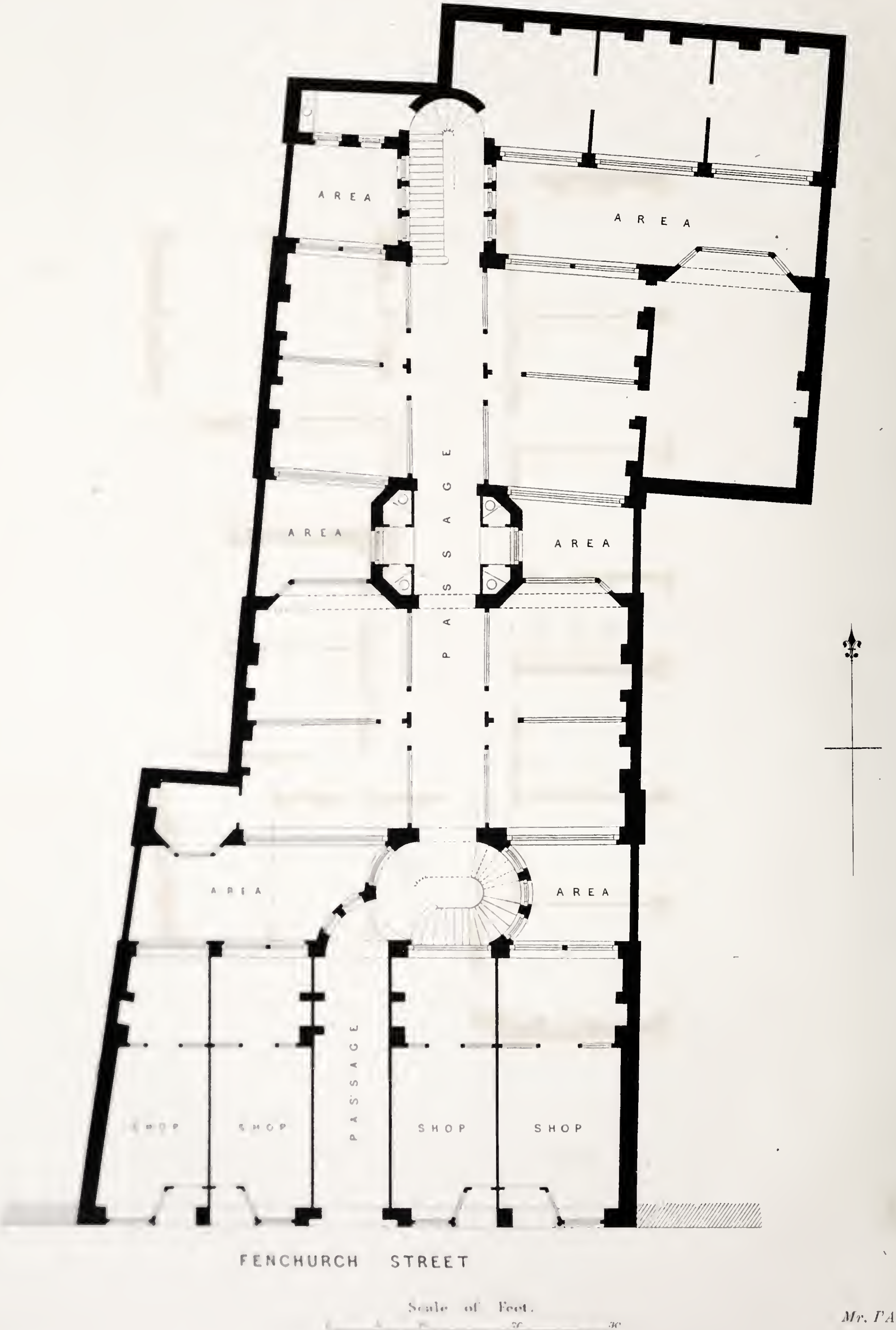
Mr. HENRY BAKER, Fellow, as an old officer under the Building Act, would ask Mr. I'Anson by what authority he had calculated the brickwork of the foundations as part of the façade of the wall? According to his own reading of the Act, they were obliged to measure the area of an external wall from the base, that is, the course above the footings to the level of the topmast ceiling; this would not include the footings nor the parapet; and if another system was adopted, he thought the legality of it might be questioned. As to cubical contents, Mr. I'Anson stated he divided the buildings by party walls with iron doors; but were they to be regarded as erected for the purposes of trade, so as to come within the clause of the Act? He apprehended these buildings came within the dwelling house class, and in that view the clause requiring a limitation of cubical contents did not apply. If it did, he should like to know Mr. I'Anson's mode of measuring cubic feet,—whether it included the thickness of the walls or the mere contents inside the area of the building?

Mr. I'ANSON replied that the area was measured from the top of the footings, but the footings were not included. There was no parapet. As regarded the divisions of the building, the district surveyor with whom in particular he had had to deal, held that the building should not exceed the prescribed number of cubic feet, and he had adapted his buildings to meet that view, and he measured the area from the centre of the party walls, and including the internal and other walls.

The PRESIDENT thought this subject had been well handled both in the paper and in the discussion. He had been himself engaged in the case of Truscott, to which allusion had been made. In that case the building was erected opposite to the Merchant Taylor's School, and it appeared that by very little arrangements for light; that is if lights had been introduced into the roof of the school, they might have got as much light as was necessary. But it was held that the parties applying for the injunction were not bound to get, by other means, the light and air, which would be ample, even though the building complained of was carried up opposite to them. He thought it was a defect not to allow the parties against whom complaint was made, to compensate in respect of light and air, by other arrangements, if they did so at their own expense, and without inconvenience to the other parties. The question of the independent construction of walls on every floor was a leading principle in the construction of warehouses in the City, so as to enable the proprietors to sweep away the divisions of the several storeys, and afford new arrangements to suit the requirements of the tenants. There was one subject that had not yet been touched on, viz., the iron fronts of houses, of which there were many examples in Glasgow. Whole fronts were carried up in cast-iron, combining great strength with ample means for lighting, and avoiding large masses of material, whether of brick or stone. As to the number of windows, he did not think that would have the effect of increasing the liability of parties opposite, because if there were only one window, and that was injuriously affected by the building in front, it would carry with itself its own rights, and could not be interfered with by the building in an opposite direction. All these points had been well tried. The main law of the land was as it was in the Roman law: not to hurt their neighbour. But there were many interpretations as to the mode in which their neighbours might be affected, and many opinions as to what the width of a street should be to allow a person to carry a building to what height he pleased; because if an area of 10 feet within a building was sufficient to light all the storeys above the level of the ground, it would seem that the width of a street ought to justify the carrying up of buildings to any height whatever. He was quite sure he should carry all their votes as to the thanks that were due to Mr. I'Anson for the very interesting, and practical, and useful communication he had made to them.

COLONIAL CHAMBERS, FENCHURCH STREET.

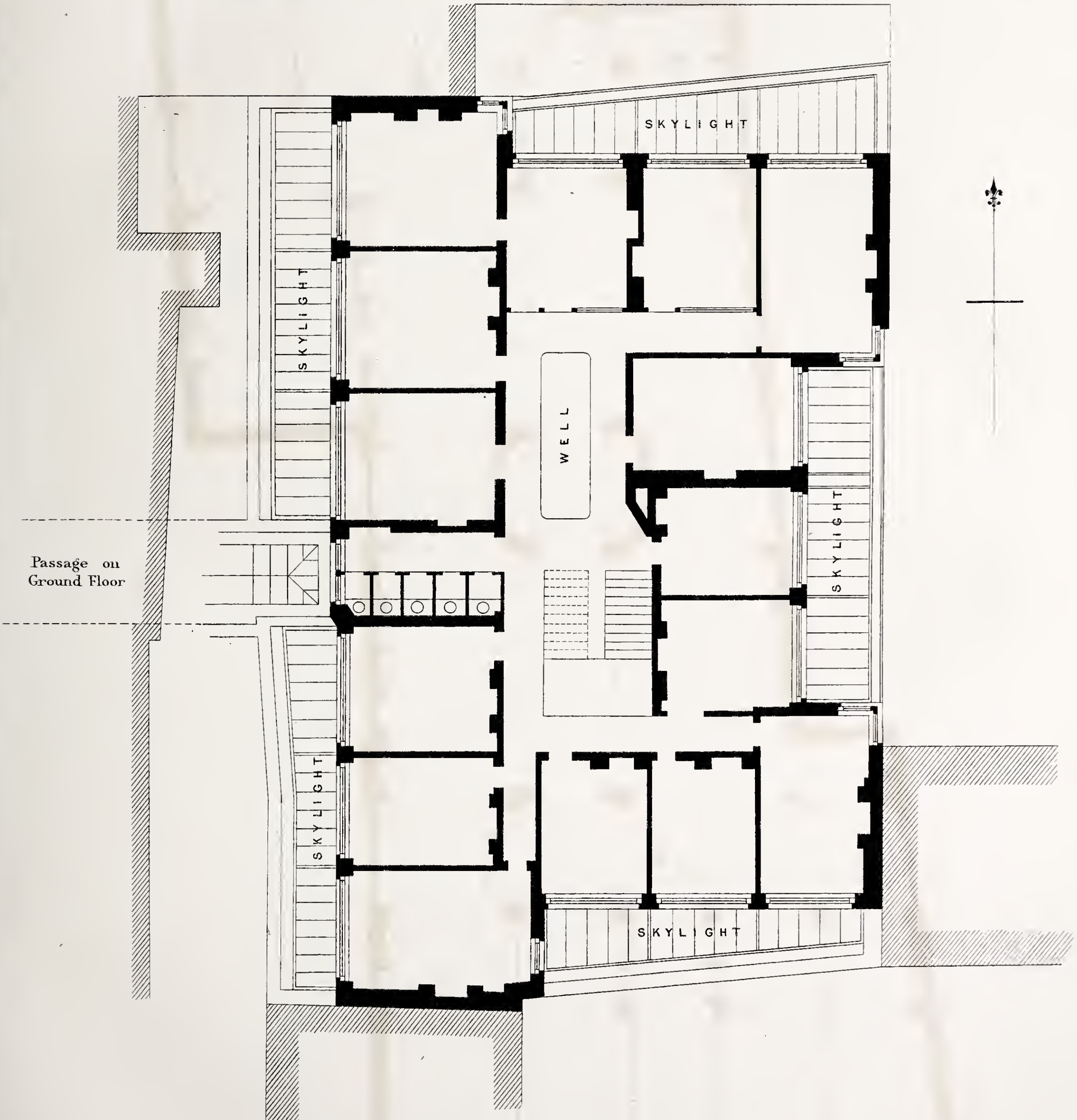
PLAN OF GROUND FLOOR.



Mr. I'Anson's Paper,
Dec. 5, 1864.

Lithographed for the R. I. B. A. by Kell. Bros.

BELL COURT, MINCING LANE.



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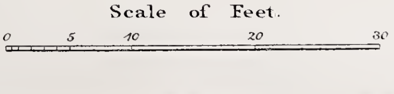

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Dec. 5, 1864.

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ON THE CONSTRUCTION OF THEATRES.

By Warington Taylor, Esq.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, December 19th, 1864.

THE construction of theatres, from their scarcity, occupies the attention of architects less than any other class of building. It is well that it is so; for the habits of a country truly domestic do not demand amusement away from the fire-side. In southern countries matters are different; people live more out of doors, and take a deeper interest in stage performances. As an Englishman, I think our customs much more natural, and certainly more conducive to family happiness. Still the theatre here as elsewhere is an institution, and on that account demands attention. In ancient Greece performances took place only at fixed periods, by day light; and as the climate was genial, the covering over the theatre was temporary. There it was for the purpose of keeping out the sun, whereas in our modern theatres it becomes permanent, and for the purpose of keeping out the rain. There immense audiences had to be entertained; in our times they are comparatively limited in numbers. It is useless to run our comparison further. To all educated men the habits of the Greeks are more or less well known; and our present object is to consider the best mode of constructing a theatre in the present day, and more especially for this country. In this paper it will become necessary to point out the differences between the requirements of a foreign theatre and an English one, and therefore we shall have opportunities of judging our peculiar wants. Such a theatre as the new Opera House in Paris, which is essentially a Government establishment, would be wholly useless in England; where a theatre is a private speculation. Concerning the plans which are deposited in the library here, I shall remark that they do not show any originality of arrangement, nor do I see anything practical in the plan. I find it an exaggerated and badly proportioned copy of Munich, with which it will not compare for compactness. Modern architects imagine that a theatre is an intensely difficult building to carry out, and consider themselves very important men when they have one to build. For my own part I cannot see that a theatre is a difficult building to arrange; it requires only common sense, and attention to the absolute wants of the place. It requires none of the higher faculties of the architect; viz. poetry. A theatre is only used for a few hours every evening; very few people live in it, only fireman, hall porter, and housekeeper. The arrangements are strictly practical, just what are wanted for the few hours it is used. In its interior arrangement it in no way appeals to our domestic wants and habits, neither is there any sense of home in it: all of which are the means of calling forth those true conceptions of domestic poetry in the architect's arrangement of a private house. In a domestic dwelling an architect has scope for his imagination; he shows himself in adapting the arrangements to creature comforts and pleasing effects to the eye; but a theatre offers none of these. It is a pure piece of practical arrangement, which the greater portion of the world never see, nor care to understand; and they are arrangements which are only called into use at certain hours: they have no ties on our feelings like the arrangements of a house.

When a theatre is to be built, we generally hear of the architect visiting the principal theatres of Europe, rushing over the continent, uselessly spending either his own money or his employer's. Foreign theatres are of no possible consequence to Englishmen. I say this, knowing myself all the principal continental theatres well, and I am quite certain I know the requirements of an English house. I will therefore briefly explain why foreign houses are of no importance to us. In France, the masses visiting the cheaper parts of the theatre do not in the least object to being penned into barricades, night after night, and being let in one by one like sheep. In Germany going to the theatre is a business; one of the family goes every performance, the subscription amounting to a mere trifle. They go in very quietly, and are not very particular about the accommodation. They walk to the theatre and back: the number of carriages, even in a town like Dresden, might be counted on your fingers; in Darmstadt, Cassell, Weimar you see scarcely one. Abroad theatres usually stand in open squares, not in back streets and crowded thoroughfares. This is all so different to England. As to the Opera House in Paris, its administration is anything but a model. Again, in Italy the large theatres, with their host of privileges, form no guide to what we want at home. But let us enquire more seriously into the immediate wants of a theatre in England. First of all we must divide audiences into two classes,—the opera audience and the playhouse audience; which difference however, is fast passing away. The playhouse audience comes on foot more than the opera; where ladies dress, and room must be found for carriages to take up and let down. There would be no difficulty in this if our theatres stood on large open squares, like at Munich, Berlin, Dresden, or Darmstadt. Our first point, then, is to build a theatre with *as few* entrances as possible, but with as many exits. People do not come to a theatre very suddenly, they come by degrees. As manager, you desire to have as few attendants to pay as you consistently can, as few money and cheque takers, in order to avoid both misdealing and error, and to make this part of your work as compact as you can. So long as you have any parts of a theatre with unnumbered seats, like the gallery and pit; where it is a question of first come first served, then you will always have to provide against crowds. The broad long gallery stairs at Covent Garden, with the door near the top, are a good arrangement; they serve a double purpose, they are at once stairs and waiting hall. For the pit people a hall must be provided, and all that can be done is to allow sufficient room for two to go in at once, and give up their tickets on each side. I shall not trouble you with describing the American arrangements, or the proposal of an Exhibition plan,—pay your money at the door, no change; these things will not work with our public, which has its own peculiarities and you must study them. The gallery staircase must be wide, easy to rise, and square. Spiral staircases are most dangerous with crowds; the narrow side will explain this at once. I must say I have never yet been able to understand why in high class theatres, where prices are higher, the gallery seats should not be numbered and sold in rotation, each person occupying a numbered seat; a thin galvanized iron rail between each seat would be no loss of space. In Paris this is not even required, for people are polite enough not to take another person's seat when a pocket-handkerchief is placed there.

The great law to be observed in building a theatre is that whenever two passages meet, by which an exit takes place, from that point on, the passage should be double the size, in order to let the double crowd pass easily down. Your passages and staircases should be direct, never to give your audience a chance of choosing by which way it should go down; they do not then hesitate or stop the way at all. In case of fire how important this is. In the new Opera House at Paris the plans seem to me to be most deficient in this respect; the large halls and staircases will give rise to much lounging about. By this rule of doubling the size of the passages where they meet; you must arrange the width of the lobbies and other parts. This appears to be the truest principle of arriving at a comfortable and safe theatre. As regards the street, you must obviate bringing two crowds together, such as the pit and gallery, for you block up the pathway, the box people cannot get to their carriages, and the police are annoyed in their duties. Hence lies the importance of getting a site at the corner of a street or an open square. Two staircases to the gallery you may generally obtain, although only one would be used as an entrance. Your various tiers, if they are circles let in single seats, you must avoid bringing together into one mass, for they then congregate and do not get away. In England, however, it is most necessary to provide a proper "crush" and waiting room, where the carriage audience may wait; but the passage from this to the outside should not be crammed up by the people who are going to *walk* away from the theatre; I mean, you must let your foot people out clear, without bringing the two together at the very doors, and certainly not bring the foot people *through* the crush room. Above all things keep your pit exit away from that of the boxes. If you can arrange to let the foot people out by the side of the theatre, and keep the front for the carriages, you will facilitate the matter still more. Proper cloak rooms with washing conveniences and water closets, the refreshment rooms, the box office, are all necessary adjuncts.

We now come to consider the form of the theatre. Everybody must know that at the side anyone sitting at the back can never see the performance; hence the sides must be kept for private boxes, which, being sufficiently large, will afford good accommodation for four people. No modern theatre can be required to hold above 2500 people; perhaps a very cheap place of amusement, with unusually large gallery and pit, may require room for 3000—lucky is the director who can fill it for any length of time. If you can build so large a house as this, no shape is as good as that of Her Majesty's, viz. the half circle continued with straight sides very slightly contracted as they near the stage; the tiers one exactly beneath the other, no one projecting beyond the other. At Drury Lane the tiers are unusually deep, from one house having been built inside the other; but this is not so good for sound. If it is a small house, an adaptation of the balcon principle must be adhered to, in order to get sufficient places. One of the best studies of this sort of house is that at Mayence, given in Fergusson's 'Handbook of Architecture.' The round corners at the stage end of the balcon at the Adelphi are very unsightly in shape; they should come sharp away from the side.

As to sound, all the elaborate theories have failed to produce a perfect house. The very best theatre in the world for sound is Her Majesty's, which was certainly built without any such scientific principles. But I will explain how it is that you do hear so well in that theatre. The shape of it is like a drum, and the wall of the auditorium is flat. The brick wall ought always to be at the back of the boxes, although for safety against fire you require another wall at the back of the lobby. If the wall at the back of the boxes be only of canvas, or plastered, you cannot expect good acoustic; hangings, curtains, papers, are all against good sound. At Her Majesty's there are no projecting ornaments of any kind—the outside of the boxes is flat and even. This is a great secret in theatrical decoration; all ornament in relief is fatal to sound, it stops its progress and true course. The pit tier fits tight on to the floor; there is no walk underneath the lower tier at the back of the pit, as is very common in small houses; and, finally, the crowning effect of all is the ceiling: it is perfectly smooth and even, without any ornamentation in relief, and in form is a slight dome; it fits on to the top of the house like the top of a violin, —in fact a theatre ought to be a sort of violin, with the audience sitting inside it. The top of the house ought to follow the shape of the lower part exactly. Never was there such an egregious mistake as building a square top to a theatre that is round below, as at Covent Garden. The ceiling must fit on like the top of a pomatum pot, right away from just above the proscenium, which should flow with a smooth continuous curve into it. Architectural pillars and other excrescencies by the stage boxes I look upon as perfect abominations; they are hideous, and spoil sound. Nothing is so beautiful as the smooth run of the boxes straight up to the proscenium frame, and nothing is so excellent for sound.

About intricate machinery I shall have something to say further on, when speaking of the stage. The pit floor at Covent Garden was made to be raised up to a level with the stage in case of promenade concerts, but this has never been done, as it was found easier to build up a platform over the pit. The necessary framework and boarding in squares once made and numbered may be put up at any time in thirty-six hours. The fire-proof construction of a theatre, so far as possible, will be best attained by proper arching; but the combination of iron with brick or stone, I can only look upon as a cheap and bungling substitute for true arch construction. Ventilation will be best attained by strict attention to simplicity, elaborate systems invariably fail; plenty of holes near the centre of the ceiling, and a high pitched roof above, with large dormer windows, will secure the best, I am certain. About this high pitched roof I have something to say. Over the auditorium it is excellent for this very purpose of ventilation; secondly it gives you a large room above for scene painting, and too many places for this purpose you cannot have, as everyone knows who is acquainted with the production of a pantomime, or any elaborate piece within a given time. Over the stage a high pitched roof insures the best working of the drop scenes, for up in the top of the gable you place the barrel floor; being then in the centre, it secures as smooth an ascent and descent of the cloths as you can wish. How to light a theatre has of late years become a question of considerable importance, but I think without reason. Surely in an English theatre we have enough light. Do you not see one another sufficiently? Do ladies want any more light to expose their personal charms and costumes? On the side of the manager, I must say the gas bill is a fearful item of expenditure. You want to cut it down, not to increase it. I think we have sufficient light at present, but it might be better distributed, or made softer. The new system of lighting through a glass roof, as at the Theatre Lyrique, in Paris, consumes treble the quantity of gas. Moreover, a glass and iron roof is bad for sound: you will never make a violin of glass and iron, and this I think settles the question of sound. Nevertheless, a partial adoption of the system in the centre of the ceiling might be adopted; but the chimney above it must be made to move; so that in the day time, when necessary, the whole floor above may be used for painting purposes. Lamps in front of the boxes are intolerable from the heat they throw out. The foot lights have also received attention of late, but some light here is very necessary for stage effects, you cannot do away with it. By slanting down the stage a little, the foot-light arrangement, whatever it is, may be hidden, but in doing this care must be taken how the shadow falls on the cloths behind. The principle of a double pipe for green and white lights, as used at the Lyceum, is no novelty; it was introduced many years ago in the North of England. In fact, I would warn architects against "flash" advertising gas firms, if you want your work well done. Get a good old-fashioned stage gas man who has some experience in these matters. Of course, what inventions may come up in the future we know not, but speaking strictly of the present, I have seen nothing at all extraordinary, or likely to be of any great benefit. The gas pipes in a theatre should be visible in case of an escape, not hidden away in walls where no one can get at them; and the room for the meters should be a strongly arched vault for safety against explosion. There should be a large air shaft to ventilate this, and let away any escape of gas. In reference to the warming apparatus I have little to say, except that it must apply to both stage and auditorium. Architects in the present day know well the various systems; they have only to choose the safest and most economical.

Here let us rest awhile, and critically examine some few of the foreign and English theatres, at least just to observe some details of arrangement. But I must warn you, that I consider there is no theatre in Europe that can be considered a model in any way at all. I do not know any theatre that fulfils the wants of its locality, much more serve as a model for an English metropolitan or provincial house. If a theatre is to be worth anything, it must be arranged from A to Z, *de novo* by the architect, and built for the especial site and for the purposes required by the locality. It is of no earthly use studying other theatres, it is so much time lost. The architect must use his own brains; and if he is gifted with plenty, he will build a good theatre; not without. The new Opera House at Paris seems to me to be very praiseworthy in respect to its conscientious arching throughout: there is none of that peculiar English sham, our construction of brick with iron; it is throughout *bona fide* arched construction. The basement seems to be arranged for certain especially local requirements, and thoroughly thought out; this, however, can be no guide to you, because you will have different requirements in every theatre.

The arrangement of the passages in the front of the house is certainly bad, but they are so disproportionately immense, in comparison with the number of spectators it is intended to hold, that much harm cannot arise. This huge building is only to seat 2000 persons. Just think of the area of Her Majesty's, which holds quite as many. However, the passages are so large that this number cannot crowd very much. Still, the fault remains where it was; the staircases are arranged for grandeur of effect, not with the idea of use—not in accordance with the precepts I have laid down. But I may here once and for all say, that you will not find one single theatre in Europe where the passages are what they ought to be. It remains for an architect of the future to build a theatre well arranged in this respect. All theatres are sacrificed for grand halls; all the exit passages are made to lead into this hall. Darmstadt has stood godfather for half the modern theatres of Europe; Munich, Berlin, Moscow, and now Paris, are all godsons; only Paris is a giant, but decidedly deformed. In all these theatres the idea has been to collect the people into the hall. *Coup d'œil*, that has been the idea; reason, comfort, and safety sacrificed for outward show. I can say nothing about their passages and front arrangements but this—they are not worth the trouble of looking at. I will guarantee that if you pay attention to the simple rule of doubling the size of a passage wherever two meet, and of leading them out directly without turns, and without bringing them all into the front hall, you will produce a better house than any in Europe. For the arrangement of the dressing rooms, I think Munich is probably as good as any; but you can arrange this better by yourself, by your own brains than by studying Munich. If I have to call your attention to any theatre in Europe as worthy of study, not as a model at all, not as being of any value to you, but as a mental exercise; it is to the Colosseum at Rome. I think Mayence and Dresden curious exercises worthy of being seen. A theatre I never examined, but have been told its wardrobes were very complete, is Warsaw. The Victoria theatre, at Berlin, is a curiosity not without interest, a double theatre, one for winter and summer. I brought this theatre to the notice of the *Builder* some years ago. In England we have some provincial theatres more or less well arranged; and some of the very old ones are often very practical, places that have been turned into theatres. Covent Garden, the largest of our most recent works, with the exception of those good points I have pointed out, is excessively faulty; that one staircase and large hall, with the narrow roadway for carriages, and no room for foot people, is very bad, and all the passages lead into this hall. Something very different might have been done on that site—two streets, and an entrance into Covent Garden. The whole thing was sacrificed to that portico—the evil spirit of grandeur. The old theatre in the Haymarket, cramped as that is for room, is emptied in half the time. A full night in Covent Garden, the whole place is blocked up after the performance is over. There is a curious idea here too of a door out of the box lobbies into gallery staircase. I suppose this is intended to let the people out in case of fire; but imagine the confusion, with the immense gallery tearing headlong down the stairs.

We come now to a very important point, the decoration of the interior. Great colouring and great decoration are not obtained by rule. If any one would compare scientific with veritably artistic decoration, there is an excellent chance at South Kensington. One of the Courts at the side of the first hall has been elaborately decorated by one of our first "scientific"—remark "scientific"—decoratists. Anything more coldly monotonous and exact than the colouring you could not find. Well, just below this are two or three splendid cases of Japanese and Chinese wares, and their decoration, you know well, is not "scientific," but artistic. The contrast is really curious, the exquisite design, fancy and colour, of these Japanese and Chinese wares is most marked when compared with the machine-like monotony of the scientific. How is it possible we can have decoration when it is not put under the direction of great artists. The decorator of the present day is a separate being from the painter; the decorator has become paperhanger. You cannot have decoration unless you do as was done in the middle ages, put it in the hands of a great painter. It is not absolutely necessary that he should execute all the work, but it is necessary that he should direct the whole. In the case of a theatre this would by no means be difficult, because the decoration must be of a kind to be easily renewed; the interiors so soon become dirty. Very elaborate highly finished paintings are out of place; in a few years they would be destroyed, and must be renewed. Therefore the decoration must be a simple effect of colour; superintended and directed by a thoroughly great colourist.

I have said already that all relief is inadmissible on account of its injurious effect upon sound; and I will further add, that everything in relief catches the dust, and soon makes the house look shabby; it is liable to be knocked off by the cloths hung over the boxes at night. Decoration in the middle ages was confided to a man like Giotto, and in the present day it must be directed and carried out under the guidance of any painter known as a great colourist.

Here I wish to call your attention to an excellent school of art in England. There is no necessity to go abroad, we have an excellent school whereon to found our modern work. In Norfolk there are numberless churches with beautifully painted roofs and screens—marvellous pieces of colouring, the very thing we want—they are English, and we want English decoration. Here then, in Norfolk, you will find a suggestive style, the traditions of which you must hand on. If you will look at Brandon's Timber Roofs, you will find a coloured plate of Knapton Church—its roof. Nothing could be more suggestive for the decoration of a modern theatre; the yellow ground is the very best colour for gas light. There is about this plate, however, a dreadful exactness and evenness of tone that is never found in the original works. This evenness of tone in modern manufactures is wholly at variance with Eastern custom. The yellow of a Persian carpet is never for two inches alike, and this gives it that exquisitely pleasing character. Novelty, for its own sake, that is when sought for to make effect, every one knows has been the ruin of art in all ages, whether Classic, Gothic or Renaissance; the constant strain after novelty destroyed Gothic and brought Renaissance into Rococo. Novelty not arising out of use or wants is contemptible.

But at this moment our decorators are suffering from a huge nightmare of geometrical stiffness of form and cold arithmetical evenness of colour. The wisest remarks on decoration that I know are those by Mr. Ruskin, in the third chapter of the "Two Paths," a chapter that cannot be read too often. He plainly shews up the fallacy of supposing that it must always be geometrical and stiff; that geometrical decoration is very well in its place, but there is a higher form of decorative art; and the passage I shall quote describes the beauty of the landscape decoration of the Japanese most effectively, although not directly alluding to it. "Any of our people, bred on our fine modern principles, would have covered it with diaper, or with stripes or flourishes, or mosaic patterns. Not so Correggio—he paints a thick trellis of vine leaves, with oval openings and lovely children leaping through them into the room; and lovely children, depend upon it, are rather more desirable decorations than diaper." Mr. Burges has often and truly said, the human figure is rather more desirable than notches. The Japanese think landscape, trees and lovely birds are decidedly better than geometry; they always give the right amount of work in the right place; they do not paint a miniature on a plate, but paint one of their home landscapes, with feeling, in one colour, grey-blue on white plate; this is not a finished painting, that would be out of place, but a well executed sketch.

Having dealt so far with the interior, we proceed to consider the outside of the building. The theatre at Dresden is round, following the form of the inside; this is by no means a bad form, when you are not required to construct numerous saloons, and other rooms in front of the house; and on an open square it permits of any quantity of exit doors. Such a shape is out of the question in England, where the sites of theatres are usually cramped and in odd out-of-the-way positions. Here the architect must make the most of his ground, and work accordingly. However, I wish to protest most strongly against the air of grandeur that all architects think it necessary to give to a theatre, and which has raised in the public mind vulgar and fixed notions as to what the outside of a theatre must be. I wish particularly to protest against immense porticoes and grand façades. In fact, I protest against grandeur generally—that sort of grandeur made up of arcades, continuous rows of arches, monotonous rows of windows, bound together by stringcourses and capitals. It is the sort of effect you see in the large warehouses of the City, recently built, and applies to Renaissance as well as Gothic. These buildings literally stink of money. Grandeur in a building is only another word for assumption, conceit, and "do the grand;" in other words, it is a lie. Now of lies and assumption there are quite enough inside the theatre, without parading the same to the public outside. But in what style is our theatre to be built? Greek is unsuited to our climate, and does not express the English mind; the same remark applies to Renaissance, and still further it applies to French or Italian Gothic. Therefore our theatre must be built in an English style, not eclectic, but one founded on our National architecture, founded on the traditions handed down to us. What I should like to see an architect have the courage to do, is to build a theatre of English bricks, in the very simplest constructive manner, without any parade of grandeur or assumption at all. If you ask me what modern building it is to be like, I will tell you plainly; it should be like the clergy houses attached to All Saints, Margaret Street, by Mr. Butterfield, only still simpler, without the patterns of black bricks. These houses have a decided English look; the windows are of a purely constructive form, put in just where they are wanted, without any attempt at façades and grandeur. It would be a pleasure for once to come down to honest simplicity, and to see a building without any capitals or carvings—an absence of ostentation for once. It is this pomp, showiness, and novelty hunting that is the curse of modern architecture, whether Gothic or Classic. We want to come down to the simplicity of the new buildings at Merton College, Oxford, or the shops in Worship Street, Finsbury. I would fifty times sooner have the monotony of Harley Street, than the vanity and pride of our new buildings in the City.

At last we come to the stage; but before I proceed, I shall suppose that the water apparatus and necessary fireman's arrangements, with tell-tale clocks, &c. have been duly provided for. The width of the proscenium should never exceed that at Covent Garden, if too wide it is very awkward for the actors; the height must be regulated by the gallery and back scene; the people at the back of the gallery should see the whole stage. By advancing the stage very far into the auditorium, you do much for sound, but it is so much out of the manager's pocket; as hereby you loose so many rows of stalls, therefore a medium must be sought in this point. Of the foot lights I have already spoken, we will sink the stage a little, and hide them from the eyes of the public. Here, too, we must not omit the orchestra; its floor should be sunk deeper than is usual, so as to hide the violin scraping, which rather spoils the illusion. The stage is a picture which the audience look at through a frame. The proscenium then, must be treated strictly as a frame, and the drop scene, being so long before the audience, should be a picture excellent in every way, and pleasing to the eye. The construction of the stage hardly falls within the province of the architect, it must always remain the work of the master stage carpenter. Touching foreign stages I shall remark, that they are in no way better than our own, if anything inferior. In France no changes of scene are made without dropping the curtain. In England the quickness with which we change a scene before the public is wonderful, and a great credit to our master carpenters. In Germany the changes are perfectly ludicrous; the wings often, as at Munich, move by counterweights from a central barrel on the mezzanine floor; the change is very steady, very slow, and very German.

You never can work by machinery as quickly as by men's arms, particularly Englishmen's. With French stage carpenters there is such a noise, that I do not think you could safely allow them to make a change before the public. Machinery of all sorts has been tried on the stage, and invariably failed, more especially in England with our pantomimes. Nothing but men to each wing and in the flies can do the work as it ought to be done. All practical stage managers prefer as little machinery as possible; nothing works like the old barrel and counterweight. It is only a favourite scheme with all novices to imagine some complicated system of machinery. Old stagers know what it means at once. The foreign principle even of working the wings on ladders running on a train on the mezzanine below, is wholly useless in England. We find nothing works so quickly as the old fashioned wing, with a wheel in front, each wing managed by a carpenter. It is very easy to talk about deep stages of 100 feet and upwards, but you must remember the number of extra men you require on each side of the house for every extra 10 feet, and the quantity of supernumeraries to fill up the stage; all these have to be paid. With a clever scenic artist, 60 feet is deep enough for all purposes. On the other hand, great width behind the proscenium is of importance; you cannot have too much room at the sides of a stage. In England I think we have not fairly considered the German question of a flat stage, instead of one on the incline. It is a question worthy of more attention than has been given to it; it has become very general abroad. The stage of the Victoria Theatre at Berlin is flat. In London for the last three years it has been much more general than formerly to have built up or set scenes. The Lyceum is now constructed purposely for these, but it cannot be considered successful when carried to that extent. If a new piece had to be brought out suddenly, or a change of performance take place, it could not be done; there is so much labour involved, and a pantomime is out of the question. But with all these technicalities the architect has little to do, he must seek a good practical stage carpenter, and leave the stage building to him. There are only one or two points; I think the flies might be higher up than they are, and with a slight alteration of the batten lights we might get rid of sky borders; those pieces of canvas very unlike sky. Of course I presume you will build high enough to allow the cloths to go up straight, without being caught up in the centre by a batten, as at Covent Garden; a plan that entails more machinery, and double expense in rope. The wood-work of the stage floor should be so made that it could be taken up and cleared away at any time, portable in fact; you never know how you may want to cut your stage about. Great depth below, and clear width without wall, is very necessary; sinking scenes the full width of the stage are common in fairy pieces. The mezzanine floor should be at least 8 feet high, and as clear as it can be made. The various rooms required for the different departments will differ in every theatre, and the architect must have a clear understanding upon this and all other details with the manager beforehand. Near the orchestra you want a waiting room for the musicians, with cupboards for their instruments and coats, lavatories and other conveniences; the music library should not be far off. One painting room we have already over the auditorium ceiling, but we want another at the back of the stage, arranged as at Covent Garden, where the artist can paint against the wall upright; contiguous to this must be the carpenter's shops. Then the property and armoury rooms must be near the stage, and a very well ventilated property shop, for the making of green leaves and other necessaries is a most unhealthy employment. The dressing rooms for men and women should be kept apart, on opposite sides of the house if possible, with tailors' and dressmakers' shops and wardrobes just above them, and fitted with lifts to send costumes up and down. Supernumeraries and soldiers' dressing rooms are also required. A large magazine near the stage, to keep the stock scene cloths and wings, properly fitted with racks and grooves, to stow them all away in good order; this should be so placed as regards the stage, that the cloths may be taken straight in without any corners to pass. But above all things I must remark that your stage and passages must be free from all wind and cold air. Singers' throats must not be lost sight of; plenty of swinging doors, and proper waiting or green rooms for men and women, are of the utmost importance; for no one ought to be on the stage that is not immediately concerned in the act. Proper apartments for firemen, hall porter and housekeeper, kitchen and cellars; rooms for the manager, secretary, treasurer, chorus and solo practice, and water closets, &c. throughout the house, and I think we have pretty well run through the requirements. I have now only to add that, imperfect as my endeavours are to enlighten you on the subject of theatres, they are, at least, founded on experience, and as such I trust you will accept them, with all due consideration for shortcomings.

Mr. T. HAYTER LEWIS, Fellow, having been called upon by the Chairman, (Mr. STREET) said, that he thought the thanks of the Institute were due to the author of a paper like this, as it must have cost him much time and labour in its preparation, and he had great pleasure in moving the vote accordingly; but he was under some little difficulty with respect to it, as he differed very much from Mr. Taylor in many points touched upon. Mr. Taylor had run through all the requirements of a theatre, and to some extent he agreed with him. He went with him entirely as to the decorations; he would even go a little further, and say, he thought that not only the decoration should be directed by a thorough artist, but that the architect himself should be so qualified as to be that artist, and so to finish his own work. He did not think that any other person, however gifted, could so thoroughly enter into the feelings of the architect as properly to finish the work which he had designed. With respect to the accesses, no doubt Mr. Taylor was correct in saying they must have as numerous accesses, or rather egresses, as they could, and he supposed they would all try to do that, so far as space would allow. He thought Mr. Taylor had too much put aside the requirements of architectural skill in designing the inside as well as the exterior. He had argued that there was no poetry in these things, but simply that theatres were matter-of-fact places for hearing and seeing. For Mr. L.'s own part, he thought that of all buildings a theatre was the one in which the fancy of the architect could be most freely indulged. It was adapted for scenic decoration; it was a place of pleasure; and it seemed to him the architect ought to exercise his utmost artistic skill upon it. He did not say that he could work upon it with the same deep and earnest feeling with which he would be actuated in designing a sacred edifice, but it seemed to him to afford scope for the exercise of the greatest artistic power. With regard to acoustics, Mr. Taylor had laid it down as a law that the shape of the auditorium should resemble, both at the top and bottom, that of a violin, that was to say, that the form which gave the best sound externally, when acted upon from the outside, as a violin, would be the best also where the auditory and the sound-producing force were inside, as in a theatre. That seemed to him as opposite a conclusion as could be. A theatre, with its deep recesses and partitions, was as opposed to the theory of acoustics as one could conceive. He remembered consulting one of our most eminent Scottish philosophers respecting the plan for a church; the answer was, that in his opinion the principle he (Mr. Lewis) had adopted would most probably answer, but, he added, that he had studied acoustics probably as much as any man, and the conclusion he arrived at was that in applying theory to actual practice he knew nothing about them, and he believed nobody else knew more. When such an opinion was given, with the true modesty of knowledge, it behoved us all to be careful in laying down a law too strongly. With respect to construction, he did not quite understand Mr. Taylor as to arching. He agreed that cast iron and brick arches were not fire-proof, and he believed not so much so as good solid oak beams and thick plastering; but he did not understand how brick arches and solid piers could be applied to the ceiling and supports of the boxes. [Mr. TAYLOR observed that his observations applied to the passages. The arches of the passages were often constructed bearing on iron girders.] It depended very much on the construction of the girders;

but brick arches on solid piers were, no doubt, a great deal better than iron girder construction. There was one other point to which he would refer. He was lately called upon to design a theatre very rapidly. He had seen most of the theatres mentioned by Mr. Taylor, and also those in Italy; and if he had had time he should have looked at their plans to see if he could improve by them upon his own notions, so as to be able to make a perfect theatre. It seemed, however, that it was Mr. Taylor's opinion that no theatre was known which was not badly designed, and it was, therefore, to some extent, consolatory to know that one need not trouble oneself about anything already done, but that by exercising common sense only, we could, from the depths of one's own consciousness (to use a German phrase), work up the perfect design required. As to the exterior of these buildings, he was sorry to differ entirely from Mr. Taylor, for, if he understood him aright, he would have the exterior of a theatre like Mr. Butterfield's houses in Margaret Street, only without even their slight ornamentation. In fact, the ideal seemed to be as near as possible that of a Quaker's meeting house. He had a strong objection to that, in an artistic point of view. Mr. Butterfield's elevation seemed, no doubt, unexceptionable for the particular purpose, and the plainness of a Friends' meeting house corresponded well enough with the severity of their worship; but there would be an end to all expression in architecture if the same style of elevation were properly used for two such opposite purposes as those of a meeting house and a theatre. He objected, no doubt with reason, to great porticoes and such things, which were put up merely for artistic decoration, without use, but that a theatre should have no exterior decoration he would not agree. The various hints, however, as to the actual working of a theatre, coming from a gentleman of Mr. Taylor's practical knowledge, must be valuable, and as such he begged to propose a vote of thanks to him for his paper.

Mr. I'ANSON, Fellow, remarked that he had lately visited one of the large theatres in Paris, built on the *quai* side, finished within the last few years. Last week he visited the Théâtre de Châtelet, and had an opportunity of seeing the effects of lighting from a glass roof, and he could quite understand that such a method of lighting involved a very large consumption of gas, but he could not say the effect was to his mind satisfactory. It was wanting in the brilliancy which English theatres possessed, and which the other theatres in Paris, not so lighted, exhibited. He thought, as far as he could judge, that it was not a happy introduction, and took away much of the artistic effect which was produced by a solid ceiling, and he thought it was not conducive to the spread of sound. He had been surprised at the statement made by Mr. Taylor that the scenes in the French theatres could not be shifted without dropping the curtain; for he had himself seen it done, and in this respect, perhaps, they had taken a lesson from us. One thing which, in his opinion, detracted very much from the comfort of theatres was the modern practice in France and Germany of adding balcons in front of the stage boxes, which overshadowed the pit and rendered it very dull and disagreeable. In fact, the pit seemed at the present day to be dwindling to nothing, its space being occupied by orchestra stalls, and arm-chairs. In the Théâtre du Châtelet the line of boxes ran up like a large picture frame to the proscenium, with an unbroken line round the auditorium of the theatre. He had great pleasure in seconding the vote of thanks to Mr. Taylor.

Mr. TAYLOR said, as regarded the shape of a theatre being like that of a violin, the sound of a violin was produced from its board—the top and bottom joined by the sides; and if that produced the best sound, internally the sound would be the same. It was exactly the same principle as in a whispering gallery. It was the peculiar form which carried the sound round, and he was quite certain that was the form of the best theatres in Europe, and the wood being seasoned almost to rottenness, it sounded like an old violin. With regard to the balcon principle, he considered it was bad in the French theatres. He regarded the Mayence Theatre, as answering the purposes for which it was required, as the best building of the kind he had seen. It was an admirable theatre inside, and was spared the unsightliness of the balcons stuck on the front of the boxes. With regard to the French scene shifters, he believed they had somewhat improved in their practice, but they were quite incapable of managing pantomimic scenes in the way in which it was done in this country.

Mr. THOS. MORRIS, Associate, would remind the meeting that some thirty years ago, a Committee of the House of Commons was appointed, to take into consideration the general subject of dramatic literature, and the circumstances of the stage in this country, as also the causes which had led to its decline in former times. A number of the more eminent actors of the day were examined before that Committee, and a great deal of valuable information was adduced. Mr. Wightwick, architect, also gave considerable attention to the matter, and published some excellent remarks on theatres. The size and form of a theatre depended very much upon the particular character of the performances intended within it. If required, for example, for lyrical purposes, it ought to be specially adapted to them; but Mr. Welkins, a comedian of some celebrity, who was examined before the Committee, spoke against the acoustic principle being carried to too great an extent, and said it caused the performer to feel that he was "speaking in a tub;" and it might be equally prejudicial to musical effect. The real place in which to apply the acoustic principle was (not to the auditorium, but) to the stage. There were some practical difficulties about it; but it was overhead that the reflector should, if possible, be placed. With respect to the ancient theatres, he would remark, that nothing could well be more dissimilar than the construction, arrangement and objects of the ancient and modern edifices. He was not, at the moment, aware of the existence of any earlier permanent playhouse than that by Palladio, at Vicenza. There was this characteristic, however, about the old theatres, that every one who took a seat, had an equal chance of seeing and hearing. In modern theatres both these matters had been much lost sight of. They put up private boxes so that people looked diametrically one against the other: they did not look at the stage at all, and it was next to impossible to see what was going on there. In operatic representations the stage was brought bodily forward to the orchestra; but in tragic plays and spectacular representations some distance was necessary between the actors and the audience. The performer lost power if he came too forward; while for the mere domestic or comic drama a slight depth of stage was sufficient. Covent Garden was built chiefly for operatic purposes; but he thought Mr. Taylor might be able to point out some theatres in which a greater amount of attention had been paid to really giving the audience a view of the stage. One disadvantage of having people in a theatre who could not both see and hear was that they were more or less apt to become a nuisance to those who could.

Mr. JOHN W. PAPWORTH, Fellow, said that he would not trench upon the points noticed by Mr. Lewis, except to suggest that even Mr. Taylor had found, with respect to the flat floor of the stage in Germany, a benefit from studying executed examples which rather detracted from the value of the advice not to study them. Mr. Papworth fully agreed with Mr. Taylor that common sense should be the chief guide of the architect even in designing a theatre, but protested, with Mr. Lewis, against the allegations of want of common sense in preceding architects which had been introduced into the paper just read. For example, if an architect were directed to sketch a theatre, he would probably commence, *more majorum*, with a semi-circle, which had been considered by almost all managers as a proof of common sense: he would then, in order to accommodate himself to the manager's requisition of seats for more than could well see and hear the performer, show his common sense by drawing two tangents to the semicircle divergent to the stage, so that all might at least see, if only through telescopes; but here the manager would again interfere and insist that the tangents should converge to the stage in order to lessen the width of the proscenium, and common sense would be sacrificed to the manager. Having the plan, the architect would proceed to indicate the section; and, *more majorum*, would raise the seats as in the ancient theatre. But here the manager would again interfere and insist that the audience should be packed in tiers of galleries, and common sense would be sacrificed to the manager. Then the architect would not, as a matter of common sense, place the foot lights forward so much as one-third of the length of the auditorium, but again the rule of common sense is negatived by the manager. Neither would the architect naturally put a high pitched roof over the auditorium; but again the manager interferes with a resolution to make the painting room in the roof, and consequently the ventilation so acts, that the inevitable draught from the stage carries the sound forward and upward through the windows at the back of the gallery: for example, a back attic at the hotel next door to Her Majesty's Theatre was not a bad place for hearing an opera; it might be expected that the chorus was better carried out of the theatre on that draught than the solo; but the reverse deduction would be that in the theatre the true effect of the chorus was lost except to the upper part of the house, and this was more or less the case in every gallery that Mr. Papworth had entered; for the more the performer advances into a house, the worse he is heard by all but those who are nearly on the same level and in front. Mr. Taylor believed that the ceiling of Her Majesty's Theatre was of wood;* but Mr Papworth had a tradition that it was originally plastered on reeds, and thought it would be worth while for some one to ascertain whether the plaster ceiling had been removed to make way for a wooden one; and, finally, (as Mr. Taylor had allowed), the architect's abandonment of his common sense to adopt the requisitions of the manager, ended in a stage and proscenium so arranged as to limit the range of view from the upper seats to a few planks of the floor of the stage. Mr. Taylor would, probably, be inclined to modify his view of the propriety of putting gas meters into a strong room, if he considered that an explosion in unconfined space was likely to be less damaging than if it occurred in a magazine. With regard to scene shifting abroad, he (Mr. Papworth) would say, that he saw, about 1850, in Paris, an actor apparently ascend from the cabin of a man of war to the deck, and that the illusion was so perfect that he did not recollect the moment at which the one scene could have been substituted for the other. With regard to the decoration of the fronts of the boxes being injured by the cloths placed nightly over it, Mr. Taylor would, perhaps, see that the argument might run that the stupidity consisted in the manner of putting the cloths, not in the amount of projection in decoration. As the Strand Music Hall exhibits the result of lighting through a glass ceiling, the question raised by previous speakers could be readily resolved for himself, by any one, so far as the point of brilliancy was concerned; but whether the auditorium of a theatre should be brilliantly lighted or otherwise, was a question which the public would soon solve if the manager had common sense enough to appreciate the public feeling. For his own part, he (Mr. Papworth) thought that the public would not frequent a dimly-lighted auditorium, and that the expenditure of gas (lowered during the scene) must be regarded as a portion of outlay as necessary as advertisements. The assertion made by Mr. Taylor that Her Majesty's Theatre was one of the best in London in regard to its acoustic properties, was worthy of serious consideration; it might prove, that after all that had been said about having the sides of a theatre undecorated, and lined with resonant material, the best room for hearing would prove to be one hung with drapery and broken into pigeon holes, into which the due quantity of sound entered and was absorbed, so as to cause no echo. But, at any rate, the architect might depend that a building built to please one manager, could not be expected to meet with the unqualified approbation of another lessee.†

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* In Britton and Pugin, "Illustrations of the Public Buildings of London," 8vo. 1825, i. 77, it is mentioned by J. B. Papworth that "the whole theatre is lined with thin wood;" which might be interpreted to include the floor and the ceiling.—*J. W. P.*

† Roughly calculated, it would seem that (not including the site) the building a theatre without galleries to hold as many persons, say 1000, as one with three galleries, would cost as three to two; but the question is not one of interest or expenditure, it is one of repayment by a public that wants to be comfortable.—J. W. P.

Mr. R. Phené Spiers, Associate, remarked that the French Opera House had other de mandsthan that of the simple representation of operas, which would in some way account for the enormous vestibules remarked in the new design. The French needed *entr'actes*, or intervals of great length between the acts, during which time more than half the audience walked about. During the Carnival, also, the Opera House served as a ball room for the *bal masqués*, and the necessity for such space would be easily appreciated by anyone who visited the present Opera House during a similar entertainment, as that, though spacious, was by no means large enough for the requirements. With reference to the exterior of theatres not being ornamented, it seemed to him that the external architecture should be a fair index of the character of the representation or performance inside; and as there were lies and assumptions inside, there could be no inconsistency in introducing the same in the exterior. Mr. I'Anson had taken a strong objection to the continental system of balcons encroaching over and cutting out the pit. As far as he (Mr. Spiers) was concerned, it was a mystery to him that managers had not made use of that space before; for it was the best place, and afforded the largest sums to the managers, as they were always full and higher prices were charged for them. He believed the system of having tiers of boxes over each other to a great height was a mistake. It was true that at the time the competition for plans of the new Opera House took place in Paris, one of the rules seemed to be that the form of the theatre should be similar to those already in existence; but that was not on account of sound and sight as regarded the stage, but from its being of paramount importance in the French Opera that the audience should see one another. He believed the old form of the Greek theatre was the best for sight of stage, if not for sound; and one of the best theatres for hearing was the old Théâtre Lyrique, which was built specially for the representation of the plays of Alexandre Dumas, and the form of it was less a semicircle than half of an ellipse, the larger axis being parallel with the stage.

Mr. W. Burges, Fellow, remarked that the theatre at Padua was in the form of the old Roman theatres, the pit being quite free, and surrounded by four or five concentric rows of seats, following the course of the two tiers of boxes above. It was certainly one of the most beautifully decorated he had ever seen. In the 'Dresses and Decorations,' by Mr. Shaw, there was a reduced copy of a print of a Mediæval theatre, from the 1496 'Terence,' published at Strasburg. In the centre of the space occupied by the building two concentric galleries rose one above another. They appeared to be attached to a circular pillar in the middle, which probably did duty for a staircase. Three little gabled erections at the foot of this central staircase or pillar did duty for the scene, or perhaps for the green room, while the performance took place on the vacant part of the floor. The whole design was doubtless due to a misunderstanding of Vitruvius.

The Chairman (Mr. G. E. Street, V.P.) having added a few words—a vote of thanks was tendered to the author of the paper.

SOME INFORMATION FORWARDED FROM ABROAD TO THE HONORARY SECRETARY FOR FOREIGN CORRESPONDENCE.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, January 9th, 1865.

In November last your Foreign Secretary forwarded a request to our foreign members that they would supply him, at an early opportunity, with information as to the state of our art and the progress of works, public and private, in their respective countries, which he might communicate to this Institute. Several of our foreign members having already complied with the request, he now submits a portion, reserving for a future occasion the remainder, and whatever may hereafter come to hand, should that now laid before you prove sufficiently acceptable to warrant a further call on your attention.

The first piece of information has been transmitted by our recently elected foreign corresponding member the Chevalier I. da Silva, the donor of the medallion* presented this evening. Any thing respecting Portuguese architecture must, I think, be acceptable. With the exception of a monograph or so, our stock of information is but scant. Gwilt, in his Cyclopædia, gives a chapter on Spanish and Portuguese architecture, in which the latter is conspicuous, as one of our statesmen once expressed himself, by reason of its absence. I may venture, therefore, to give utterance to the wish, that a work on the subject, or on a leading feature of it, which rumour gives out as being in course of preparation by one of our Vice-Presidents, may soon make its appearance, and inform us what the architecture of Spain and the complementary portion of the Peninsula, viewed by English eyes, really is. For a native survey of a part we may now accept the following observations of the Chevalier I. da Silva, President of the Association of Portuguese Architects, who, writing from Lisbon, 23 December, 1864, says:

" Nothing very important in architecture has been done in this country since the construction of the church of the Estrella, built by Queen Donna Maria I, and the commencement of the new Royal Palace of Ajuda, the public not having sufficient artistic taste to recognize the merit of good architecture. The Government, for its part, is not rich enough to undertake any great works, besides railways, in which our art could display its resources and offer something worthy of observation, and thus induce a taste for the Fine Arts among the inhabitants of Portugal. It is true that a château has been built for H.M. Don Fernando at Cintra, but the building is rather a picturesque royal cottage than a palace, properly so called, for its architecture is more a caprice than an affair of taste pure and monumental. The most important private constructions have hitherto followed the taste adopted in rebuilding the city after the great earthquake of 1755, viz. that displayed by the architect Frederic Londuvic in the palace and convent at Mafra, a type which has been generally imitated, and become habitual for want of a better.

" However, of late, houses of better style and material have been erected, some with polished marble fronts, giving another character, while in their arrangement the endeavour has been made to satisfy the requirements of modern civilization. The façade of the new Chamber of Peers is already well advanced, and will be entirely of free-stone; the architecture is not amiss, but the choice of the site for this façade, the way left for the principal entrance and the public service are altogether faulty, even absurd, producing a very bad effect, unbecoming the palace of the Upper Chamber.

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* The plaster medallion of Buttaca, architect A D. 1500, of the monastery and church at Belem.

“Great works will shortly be undertaken, as the palace of Ajuda is to be finished, but not according to the original design, which would have made it twice the length, and out of all keeping with the present domestic requirements of the Court. The works already in hand will be terminated by placing square towers at the two other angles like those now built. The palace will be situated between the two Grandes Places, and the side fronts will face gardens, while their majesties' suite of apartments will look over the river. In this construction something may be done to advance art, for there will be a fair opportunity for the display of talent and good taste, ample space being at command, while funds will not be wanting to render it an edifice perfect and fit for the habitation of the sovereign.

“An astronomical observatory is also in hand, in a fine situation, on an eminence, visible from all parts of the city. The plan presents no novelty, for it follows that of the Russian observatory, diminished by one half. It is so arranged as to answer the purpose in view, but, unfortunately, the architectural details are not the most classic. The pedestal of the monument to the memory of the great Portuguese Poet Camoens is laid; but it is to be regretted that the place is irregular, and that the design was not calculated for it, while the style does not harmonize with the surrounding buildings. All this is against common sense, and shows at once that the monument is out of place in its present situation. It is, moreover, a pity that the first erection of a monument here to commemorate a great man should result in a failure. as it may deter us from raising other memorials to those who have rendered good service to their country.

“The chief station of the railways in Lisbon is well forward, and will be finished next year. Its architecture is mercantile (permit me to use the word), for more thought has been bestowed on making a vast building well lighted rather than a monumental one such as would become a great capital. The roof of iron is very strong and carefully constructed: I need hardly say it was made in your country, for whenever we want any thing first rate in such matters, we have always to send to England.

“We shall shortly have an artistic exhibition of designs sent in competition for the monument to the Emperor Don Pedro, which will be placed in the Great Square bearing his name. It is said that there will be more than seventy models by artists of various countries. The Commission has them all photographed, to form an album, and by the comparison judge of the artistic merits of the designs, and let the public know if the prizes have been awarded to those which are considered to possess the most merit. When this exhibition takes place, I will take care to send you timely notice of the relative merits of the models.

“Among the number of private constructions now in hand in Lisbon I must not forget to mention the fine palace of the very opulent banker M. Eugenio de Almeida, Peer of the realm. It is the only one which shows becoming architecture; and it is more remarkable, because that gentleman is the only one of all the rich men in our country who has built a palace without regard to the cost, and the time required for its completion. The proportions of this palace are very good, and it is adorned with sculpture, while the interior is richly gilt, &c. It may be said to be the finest as yet in Lisbon, both for good taste, magnificence and artistic merit.

“But if even these modern constructions did not evince a favourable disposition for architectural progress in this country, the very excellent restoration now in hand of the convent and church of the Batalha would alone be a striking instance. M. Lucas Pereira, a Portuguese architect, has superintended the works for the last nine years, with much skill and scrupulousness, worthy of all praise, preserving the character and the ornaments so as to make them all appear of the same epoch, whilst he has most carefully attended to the modern construction, so that it may last for many future ages.

“It is to be regretted that the coloured glass, wanting on the side bays of the choir of the church, was not made good with imitation of the fine coloured glass which existed of the time of the building of this cathedral. But this was not the fault of the architect, but arose from economy—false, indeed, in this instance, for in works of this importance in historical edifices, such narrow regard for expense should not be indulged.

"To conclude. Our Art seems to wish to make an effort to abandon the ancient routine which the taste of monastic buildings had impressed on all the constructions of this country. It appears also that the public begins to feel the necessity of having more of the comfortable and the elegant in order to live more at ease. And in order to obtain that, it is obliged to ask from the Fine Arts the assistance necessary which they alone can give to those who have the good sense to spend their money profitably and agreeably, and to concur for the civilization of their country; and this civilization has been always marked at all epochs by the progress of architecture, which transmits down to posterity the fame of the people who have successfully cultivated it. For my part, I do all I can that our art may follow the general development of our age. I have just commenced a course on the Monumental Architecture of Ancient Nations in the Institute of Portuguese Architects, and, in order to attract the attention of the public, I have in preparation large coloured drawings of ancient monuments. It is good news for the Fine Arts in this kingdom, that his Majesty the king has just made the munificent gift of 125,000 frs. annually to purchase objects of art for the Portuguese Academy.

"Excuse the manner in which I have forwarded you the information you asked for, but I am at present much engaged," &c.

Our second communication is from Charles Delsaux. It treats of a country nearer to us geographically as well as nearer akin in many respects. "Architecture in Belgium," he says, "develops itself at present in private constructions for the numerous societies, hotels of rich bankers, fund holders and manufacturers. Few large buildings are erected, but manufactories are built, country houses repaired, and the labouring population derives advantage generally from the skill of the artist. Well-to-do citizens have elegant well built and healthy dwellings, sufficiently well furnished, and ornamented with artistic objects. True, there is a little excess with respect to these, but it shows at once taste developed in the Belgians, and means within their power to procure them. A great number of small schools are building in our populous communes, and the peasants are rebuilding their habitations, which were wretched, damp and unhealthy. Our large towns are being increased while the villages are being rebuilt.

"Grand architecture, properly so called, does not display itself, perhaps, but at too long intervals, in our principal churches, and moreover it is then rather to restore those which the middle ages have left us than to produce new ones, that the funds at command are employed. It must then, indeed, be said, that the genius of our architects is now restricted, localized, and has not a field sufficiently large, nor opportunities sufficiently frequent, for showing forth to much advantage. The civil buildings, such as town halls, hospitals, almshouses, abattoirs, railway stations, small churches, and convents, are sufficiently numerous. Many are being constructed, but with economy too often parsimonious; moreover, administration and official documents have been so developed in Belgium, that the architect is overwhelmed with a surplus of preliminary formalities to be discharged, which confine his conceptions to rules too inflexible, prevent his taking the initiative, or wear him out with frequent contention.

"Of late years the railway stations have called forth some attempts, more or less successful, to unite stone and brick construction with metallurgical architecture. However, nothing has shone forth in an artistic view, and the trials of employing iron for great spans in roofs have been too timorous. Nor does the same model, too often repeated, announce an intelligent choice, which might be more varied by entrusting this description of work to architects of the highest reputation."

We next have a further notice respecting Belgium from J. P. Cluysenaar, Brussels, 30th December, 1864, who writes: "Architecture is not in a favourable position in Belgium. The Government can only spend large sums for railways, roads, canals, fortifications, and the army; all is swallowed up by these, very little remains for the arts. Every member in our Chambers must be satisfied, so long as a road remains to be paved, or a church to be built in our villages: the Government cannot encourage architecture.

"A superior school of architecture is wanting in Belgium, in which a student could obtain theoretical and practical education. We have now a lot of academies, in which drawing, sculpture, and architecture are taught, for two hours in the evening. These elementary schools exist in every one of our towns, but they can only teach the first elements of the art. Unfortunately, it almost always happens that the young men, who have passed some years in the academies, think themselves eagles in their art; call themselves architects when they have obtained the first prize, and imagine they possess really all the capacity, only to be acquired in three or four years, by following the *six months* course. This false education has produced a great number of incapable architects. For a year, the authorities of the towns have endeavoured to diminish these defects, but the little good their measures can produce will not cure the evil. There is only one means, according to the opinion of all,—the institution of a school of architecture at Brussels; some would even desire examination as to capacity! With us, barristers, notaries, land measurers, agents, physicians, surgeons, chemists, are obliged to undergo an examination in order to practice; certain persons would like to see architects subjected to the same formality, as is the case in Germany.

"The Government has been forced, by the wants of the service, to think of building new Courts of Law. For this purpose it has set on foot a competition, of which none of the numerous plans have been deemed worthy of execution. The Minister of Justice, after the loss of two years, has at last directed M. Poelart to make fresh designs. The sum considered necessary for the execution of the work had been originally fixed at six millions of francs. M. Poelart, at the end of two years, comes forward with plans which must cost fourteen millions, and of which the definite arrangement is not yet decided. For a year, the Minister has been having the arrangement verified and drawn out; probably another million will have to be added, and we shall be told that fifteen millions are required to build Law Courts, which, at starting, every one acknowledged could be carried out for half that sum. The Chambers have had to vote fresh subsidies, as well as the province and the city of Brussels. All this delay has already taken up five years, and slow as the Minister of Justice is in his proceedings, our generation will not live to see the end of the work. This is not a mere amusing story; for the same architect has taken ten years to erect the Column of the Congress, ten years for the Church to commemorate our Queen at Laeken, which are small affairs in comparison with the Law Courts. We may, then, boldly reckon on twenty years before we shall see the completion of them. The designs, of which the public knew neither the style nor the merits, have not been submitted to the Royal Commission for Monuments, as is usual with other projects which the Government carries out. The Minister has nominated a mixed Commission, mainly consisting of magistrates, and of three architects who have sanctioned the work.

"At present the Government is absorbed in the building of schools, which are being erected wherever they are wanting. These humble buildings afford very little scope for the talent of the architect; some practitioners, however, have managed to impart a certain physiognomy to these useful places of refuge.

"In consequence of the demolition of the ancient fortifications of Antwerp, that town might be made one of the handsomest on the Continent; but, alas! the mercantile spirit of our commercial metropolis rules in the plan adopted by the Administration. It has bought the ground of the Government for ten millions, and it endeavours, in conformity with commercial notions, to make double out of it, if possible, without regard to the question of art or embellishment, just as though it was only a matter of a bale of coffee or rice.

" Some artists are struggling hard to keep standing two monumental gates, of the time of the reign of Charles V., but most probably they will not succeed, notwithstanding the proceedings of the Commission on Monuments, which is also asking for the conservation of these two specimens of military architecture.

" Brussels is in a continuous state of development; its population and its houses increase year by year; unfortunately, our art does not gain much thereby. Our habits are like yours; every man likes to be master of his own home, and, as such, dwell in his own house—hence as many houses as there are families. This feeling is so predominant that even the workmen have each his own house. The superposition of dwelling rooms, as at Paris, Berlin, and other towns, cannot succeed here, the people will not have it. On the other hand, as we have no large fortunes among our inhabitants, it follows, of course, that our houses are small, on an average seven mètres frontage and two stories above the ground floor, with kitchens underground. Our large hotels do not exceed twenty-five mètres; moreover, they are not common in the Quartier Leopold, a very handsome part of Brussels, situated on the heights near the Park.

" I hope hereafter to send you a description of the new station now building, and of the architectural movements going on in the construction of châteaux and country houses."

We have, lastly, a quasi-monograph of Marseilles, from Pascal Coste, who enters very fully into details derived from good sources, connected with the progress of our art in that city. Dating from Marseilles, December 17th, 1864, he says: " The grand works carried out in Paris of late years have excited the emulation of the chief towns in France, which have desired, like the capital, to form for themselves broad lines of communication, public promenades, monuments, &c. &c. &c. Marseilles has not remained behind. Great works, public and private, have been undertaken. Of these, either executed or in hand, I now give asummary. First, the Ports. The old port was insufficient, having only 270,400 mètres[*] of surface and 2200 mètres of unloading quay. New ports have been formed to the west of the city, in the Anse de la Joliette, by means of jetties formed of blocks of stone, natural and artificial. There are three of these ports—the Joliette, the Docks, and Napoleon. Their united area is 590,500 mètres, and development of quay 9000 mètres. They have cost about thirty-four million francs.[†] The area of these three ports united is more than double that of the old port. If to the cost of constructing these ports we add that of the maritime establishments which complete them,—the annexe of the Port Imperial (now constructing), which will cost twenty millions, the Basins Radoud, four millions, the Docks and entrepôts, which have cost twenty millions,—we arrive at a total outlay of sixty-four million francs. A new quarter has arisen north-west of the city, where these ports are situated, by means of broad and direct roads, bordered by buildings for various industrial purposes, and by dwellings for the maritime population.

" Among the most important formations of thoroughfares must be named the prolongation of Rue Canébière on the site of Rue Noaïlles, and the formation of Rue Impériale, intended to form the shortest line of communication between the centre of the town and the new quarters of the Docks. Several streets, considered insufficient, have been widened, both in the old and in the new town. But in order not to enter on superfluous details, I will only speak of Rue Noailles and Rue Impériale. Rue Canebière, 30 mètres wide by 250 mètres long, commencing at Cours Belzunce, and going to the old port in a westerly direction, has been prolonged eastward, of the same width, and an equal length, on the site of Rue Noailles, which was only six mètres wide. The formation of this new Rue Canébière, which retains the ancient name Noaïlles, has occasioned the demolition of ninety-four houses, at a cost of nine million francs, and the ejectment of 2500 persons. These two streets, Canébière and Noaïlles, which are now one, form the *grand artery* of the Phocean city. Rue Impériale, recently inaugurated by the Emperor, is 770 mètres long by 24 wide. It cuts obliquely through the old town in a north-west direction. This considerable cutting has occasioned the exappropriation and the demolition of 935 houses, inhabited by a population of 16,000 souls, or workmen, who have migrated to the houses built in the suburbs of the town. The cutting away the highest part of the crest of the hill on which the part of the old town traversed by this street was built, was 20 mètres deep. The average quantity removed by this cutting, over the whole surface, was 1,500,000 cube mètres, partly breccia, tuffo, and ground. During the work, some ancient tombs of soft lime stone and some stele, of small dimensions, supposed of the Phœnician epoch, were found, also some medals, among them one of silver of an unknown Greek Colony; and, lastly, towards the old port, the hull of an ancient barque. But all these discoveries are of very little archæological interest. The total expenditure for the Rue Impériale amounted to the sum of twenty million francs. At present a new cutting through, which is not without importance, is being executed. It is for the purpose of forming a carriage communication between the north and south quarters of the town. With that view, the Cours Lieutaud is being prolonged to the Boulevard du Musée, on a length of 500 mètres, and a width of 24 mètres, traversing obliquely Rue d'Aubagne, Rue Neuve, and Rue Château Redon. Eighty houses are exappropriated; the cost will be 4,200,000 francs, including the removal of 100,000 cube mètres of ground. Population displaced 3400 inhabitants.

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[*] Mètre = 3·28 feet, English; three mètres, in round numbers, = 10 feet.

[†] Million francs, in round numbers, = £40.000.

"Several boulevards have been opened, conducing to the embellishment of Marseilles; but I will only mention the magnificent promenade, the Prado, which is now completed, by the Cheminde la Corniche, and the Park Borely. The promenade du Prado is 3450 mètres long, in two divisions. The first, starting from the Place Castellane, goes south for a length of 1620 mètres and a width of 80 mètres, with six rows of trees, and abuts on a vast circular space 180 mètres in diameter, with a basin and fountain in the middle. The other division, turning west, 1830 mètres long and 50 mètres wide, with four rows of trees, starts from the above named circular space (Rotonde), and abuts on the sea beach, where the Chemin de la Corniche begins, which follows the line of the coast, passing by Roucas Blanc, le Vallon de l'Oriol, Endoume, to the Bains Catalans. Thence, crossing through Fort St Nicholas, and along the quays of the old port, we come to the centre of the town. The whole length of the drive from Rue Canébière to the same point again, is 11,250 mètres. The Château Borely, a recent acquisition by the town, is situated at the extremity of the Prado, and south of it, on the right bank of the Huveaune. In this property (of 520,000 mètres of surface) admirably situated, a fine park with clumps of trees has been formed, besides cascades, sheets of water, and a race course. The principal building, one of the last century, has been appropriated as a National Museum. All these items have cost more than a million francs.

"The most important public buildings finished in the last fourteen years, are the Cellular Prison for 200 prisoners. It occupies an area of 7000 mètres, and the building has cost 500,000 francs. It is situated in the Quartier Chave. The Prison, or Maison d'Arrêt, in the Quartier St. Pierre, for 500 inmates. The area of the buildings finished is 10,000 mètres. Cost 600,000 francs. The new Civil Hospital (de la Conception) in the same Quartier St. Pierre, holds 780 patients. It has cost 1,600,000 francs, and occupies an area of 22,000 mètres, including courts, outbuildings, and airing grounds. In the same quarter, the Lunatic Asylum, calculated for 900 patients of both sexes, built on an area of ground of 30,000 mètres, including the various courts, airing grounds, the chapel, the official residence, attendants' lodgings, and outbuildings. The outlay has been 1,500,000 francs.

" The Military Hospital in the Rue de Lodi, occupies an area of 11,000 mètres, including the court in the centre. It is arranged to receive 600 patients. It has cost one million francs. The Barracks for the Gendarmerie, on the Prado, capable of holding four brigades, occupy an area of 3500 mètres, and has cost 70,000 francs. The Cavalry Barracks, for a squadron, and the Artillery, in the Quartier Mempenty. The Infantry Barracks, for a batallion, in the Quartier St. Lambert. The great Infantry Barracks, for a regiment of 3000 men, in the Quartier St. Charles; and near these important barracks an arsenal, magazine for field trains and equipage, and building for repairs; vast establishments, which have been executed by the Military Engineers, and of which the cost may be estimated at five million francs. The Exchange and Tribunal of Commerce, containing the Chamber of Commerce and its dependencies, meeting rooms and dependencies, the Registry of the Tribunal, and the Syndicates of the agents and brokers. It is built fronting the Rue Canébière, the centre of commercial affairs, on an area of 4800 mètres, for which site 4,800,000 francs have been paid. The building has cost 3,200,000 francs, total outlay 8,000,000 francs. The Chamber of Commerce has paid all this outlay.

" The Palais de Justice, for the Tribunal de Première Instance, has its principal façade ornamented with a Grecian Ionic portico of six columns, raised on a flight of twenty steps. It is situated in the Cours Bonaparte, on an area of 2,800 mètres. Cost 1,800,000 francs. The Mont de Piété, a large building in the centre of the town, on an area of 3,000 mètres, with a court in the centre, has cost 600,000 francs. The Faculty of the Sciences, on the Promenade des Allées de Mëilhan, has cost, for building and occupation, 250,000 francs. The Communal School, on the Boulevard des Dames, on a site of 1250 mètres, containing infants' cribs, refuge, girls school, orphanage for 1,200 children, with workshops and lodgings for twelve instructresses; the outlay for its construction has only amounted to 260,000 francs. A Zoological Garden in the Quartier Chartreux, occupying a western site, and very picturesque, with an area of 50,000 mètres, has caused an outlay of a million francs. The new Cemetery in the Quartier St. Pierre, occupying an area of 228,000 mètres for the Catholic, and 12,000 for the Protestant division—together 240,000 mètres. Purchase of the ground, 527,500 francs; works of adaptation hitherto, 150,000 francs—total actual outlay, 857,000 francs. A synagogue in rue Breteuil, in half Byzantine style, has cost hitherto 400,000 francs.

" Several churches, chapels and convents, built in the town and in the outskirts, in Roman, Gothic and Renaissance styles; some on the Basilican plan. These various religious edifices, in general of little value in an artistic point of view, have occasioned a total outlay which may be estimated at about three million francs.

" The buildings in course of erection are :—The new Cathedral (in the Byzantine style) of which the Emperor Napoleon III. laid the first stone, in 1852 ; a monument very remarkable for its size and its religious character, 130 mètres long by 40 wide, not including the projections outwards of the transepts. Total area, 6,500 mètres. The cost, according to the design, will amount to about twelve millions—four millions have hitherto been expended. The building is up to the springing of the internal vaults. It is constructed in courses of hard stone, externally white and grey (the latter from Florence), internally white and red (the red being marble from the Department du Var). All the vaulting will be of brick, to receive fresco paintings. The internal columns will be of coloured marble. This monument will have four cupolas, two bell towers on the façade, and a great number of turrets around the cupolas. It has been designed, and the erection is superintended by M. Leon Vaudoyer, architect of the Government, and corresponding member of your Institute. The Museum of Paintings and the Museum of Natural History—two separate piles of buildings, but connected by a circular gallery ornamented with columns, with a large reservoir in the centre with groups of statues; cascades and basins in the middle, grass plats, plantations and flower beds complete the effect of the building—which is situated on an elevated spot, with a carriage approach by easy inclined plains. Its style is that of the Renaissance. It occupies an area of 4,000 mètres, and will occasion an outlay of three million francs. The Public Library and the School of Fine Arts, building to the south of the Imperial Lyceum, upon a plot of ground of 2,800 mètres, including courts and dependencies, and separate dwellings for the directors of the library and of the school—estimated outlay, for the construction only, 1,500,000 francs. The Chapel of Notre Dame de la Garde, much venerated by our sailors, situated on the top of a hill south of the town, rebuilt in the Byzantine style. It is crowned by a cupola over the sanctuary, and has a square bell tower at the western entrance, on which will be placed a colossal statue of the Virgin, of bronze gilt. The cost of construction has thus far amounted to 1,300,000 francs, leaving still 600,000 for its completion. The total sum for the rebuilding of the Chapel of Notre Dame de la Garde will be 1,900,000 francs. The Imperial residence, built on the promontory of the old Anse de la Reserve, south-west of the entrance to the old port—a magnificent situation overlooking the ports. The whole of this residence occupies an area of 6,500 mètres; the building 320 mètres. The outlay, purchase of the ground and construction, will come up to two million francs.

"The new Prefecture—a large hotel with a court in the centre and a garden to the east—containing the residence of the Prefet, apartments of state to receive the Sovereign, rooms for the under Prefet, general secretary, all the offices, rooms for the archives, and their dependencies. This vast edifice, in the mixed style of the Renaissance, occupies a hectare* of ground, including courts and garden. The purchase of the ground has cost 6,000,000 francs, and occasioned the exappropriation of thirty large houses and the removal of four hundred inhbaitants. The works of construction executed up to the present time have cost 2,800,000 francs. Total outlay, 8,800,000 francs. It will cost for the finishing of the building, 1,500,000 francs, and for the internal decoration and furnishing, 700,000 francs. Total supposed outlay, about eleven million francs. Lastly, the Hôtel Dieu, an hospital situated in the centre of the old part of the town, has been restored and completed after the plans of Mansard. The approaches to this ancient hospital have been disencumbered by pulling down the houses which obstructed the enlargement of the building. The outlay for the works done, and to be done, may be estimated at 2,500,000 francs.

"Other projects are being considered. New thoroughfares to be cleared through the old town, and the enlargement of the Hôtel de Ville, now inadequate for the wants of a city, whose population is increasing every year in a considerable proportion. This population, which, under the First Empire, was only 80,000 souls, now exceeds 300,000.

"Of course private buildings are singularly multiplied, owing to this increase of population, as well as the opening of new quarters of the town, and the thoroughfares cut through the old parts of it. Many houses, with three windows and with two in front, and of a very melancholy appearance, have been demolished and replaced by spacious houses of six storeys, mostly enriched with mouldings and ornamentation. Not that all these buildings, which have pretentions, are marked with the sign of art and good taste—such is far from being the case; the result, however, has been progress in workmanship, and in the artistic tendencies of the population.

"As regards the public buildings, which I have enumerated and briefly described, they are not all irreproachable; but there are some remarkable ones among them, such as the Cathedral, the Museums, the Library and Ecole des Beaux Arts, the Chapel of Notre Dame de la Garde, the Barracks, the Prisons, the Lunatic Asylum, the Palais de Justice, and the new Prefecture.

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* Full 2½ English acres. The hectare is 10,000 square mètres, or 11960·33 English square yards.

"I will not say anything about the Exchange and Tribunal of Commerce, being the architect who designed that important monument.

"The establishments constructed by the State Engineers, the ports, docks, &c. &c. &c., are perfectly appropriate, and deserve commendation for good arrangement and skill in satisfying the demands they were required to provide for.

"From what has been said, it results that the aggregate of the works undertaken at Marseilles during the term of fourteen years, at the expense of the State, of the Department, and of the Corporation, amounts to a total outlay of about one hundred and sixty million francs*—in itself a handsome figure! But what would it be if I added the outlay caused by the construction of the military establishments, tobacco manufactory, works and factories—in short, the construction of habitations on the new lines of thoroughfare, and in the various suburbs? I forward herewith the plan of Marseilles, showing, in red lines and tint, the works executed, those in hand, and those projected."

Such are the main contents of four communications from our foreign members. They may call forth from us not a few reflections on the state of things they describe existing abroad, as compared with what our experience teaches us is the case in our own country; especially in regard to several topics which have recently engaged, and are, indeed, still engaging our attention. Professional education, examination as to competency, practice, status, treatment at the hands of the executive and of private individuals, public taste, or, possibly, the want of it—whether tending towards the simply utilitarian or towards the monumental; how far the commercial element shewn in railways, docks and entrepôts consorts with the monumental, and how far our large towns—apart from the metropolis—can be cited as examples of the union of these two elements as evidenced at Marseilles. Such reflections, and many others which arise from the reading of these letters, are topics which you, gentlemen, are better able to enlarge upon than is your Secretary, who having, in his ministerial capacity, brought the notices and observations of our Foreign friends before you, feels that he has made a sufficient call on your attention without adding any detailed observations of his own.

The **PRESIDENT** said so much matter was contained in these various communications from foreign correspondents, that he was sure they all felt much obliged to the Honorary Secretary, who had elicited it. There were many topics arising out of these communications, and he should be happy now to hear any remarks which suggested themselves to the minds of those present.

Mr. G. R. **BURNELL**, Fellow, (responding to the invitation of the President), confessed he was unprepared to go into the discussion upon the recent improvements in Marseilles, but he thought the whole system of improvements there had been begun on a very wrong principle. The Government appeared to have thought it necessary to lay out large streets through the towns, and to erect the large buildings, such as the Caseme de la Gendarmerie, and the Tribunal, and all those kinds of public buildings; while it had spent only about 200,000 francs upon the schools. He thought this was beginning at the wrong end, and that the Government had lost sight of the object for which it ought principally to labour. Again, as regarded Belgium, M. Cluysenaar had forgotten what ought to be the end and object of the Government in undertaking public works. He (Mr. Burnell) contended that the object of the Government ought to be only to supply that wherein the private enterprise of the country was deficient. M. Cluysenaar expressed regret that they had not compulsory examinations in Belgium, whereas he (Mr. Burnell) thought this would be a fatal course for architects, and for architecture.

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* £6,400,000. English!

The **President** said, he had listened with great interest to the communications which had been imparted to them, through the medium of their Honorary Secretary for Foreign Correspondence. Commencing with the observations of their friend, who had just sat down, they must recollect, that different countries had different modes of thinking, and different modes of operation, and notoriously in the philosophy of the people was to be found the rules of conduct upon which they acted. His friend forgot that the government and the municipality of Marseilles had done a great deal for commerce in uniting the docks, which were shewn on the plan to the westward of the town, as well as improving the routes and widening the thoroughfares leading to those docks—all of them practical, useful works. Four years ago, when he was in Marseilles, it was difficult to move about the town: there was no direct communication to any quarter of it. It was a city crowded up, without plan or arrangement; and the most inconvenience of access possible. In all commercial towns, the first element was thorough communication from one end to the other, and particularly that from the docks, to the other parts of the town, there should be the best access possible. They would find that the people of France, as well as those of Germany and Belgium, were not prepared to undertake many of those enterprises, which were due in this country to corporate energy and the impulse of private individuals. Their education had not tended to that independant action, and they required that such matters should be undertaken by the government, while they were prepared to pay out of the public funds for the execution of them. It was not, therefore, for us to complain of the government undertaking those works, which were expected of it by the people, but rather to approve the good sense and energy which had so promptly, in this instance, carried out works, so highly necessary, and produced results so highly beneficial. All the schools abroad, they knew, were built by the government, here those buildings were mostly due to public benevolence and to private generosity. But things were done on the continent on a different principle altogether. They must, first of all, change the habits and customs of the people, before they complained of what the government had undertaken. We should rather with pleasure see, as here, a city, in which were being effected improvements to the extent of six millions sterling, through the agency of the government and the municipality, carried out quietly and promptly under one grand scheme of amelioration and improvement. True, in a city like Liverpool, they found that there was great mercantile energy and power, and likewise vast funds, which enabled it to build five miles of docks extending along the shores of the Mersey. There was shown an earnestness which enabled St. George's Hall and the Exchange to be built, on the latter of which as much as £150,000 was about to be spent—a paltry sum after the amounts they had heard of at Marseilles, but, probably, sufficient for the purpose. In this case the energy of the people was sufficient; on the continent, under the different circumstances of the case, it was to the credit of the ruling powers that they came forward and realised these improvements. When he (the President) recollected Liverpool twenty years ago, there was scarcely a public building in it: but now the streets, which were broad, were lined with shops of the first magnificence, and public and other buildings were being erected throughout the whole of the town; and there was the Public Library, recently erected by the munificence of the late Mr. Alderman Brown, and various other edifices commensurate with the requirements of a town with a population 300,000 at least. He was at Manchester lately, a city with a population of half a million, and during his stay visited the new Law Courts erected by Mr. Waterhouse. They formed a magnificent composition in the Mediæval style, having a grand central hall, something like that at Westminster. The courts themselves were ample in dimensions and well arranged, and he believed it might be said, they were the most convenient law courts in the kingdom. The whole bar in attendance at them was loud in its expressions of approbation of the accommodation offered. Passing then from the communication of their friend M. Pascal Coste, which was a very valuable one, when they considered that he was a gentleman of great knowledge and enlightened views, who had occupied a great deal of time in drawing up these interesting details for the information of the Institute; he came to the papers which had been received from their other corresponding friends on the continent. With respect to Spain and Portugal a remarkable consideration would arise in the minds of all, viz.: that the class of art, which predominated there, was due very much to the inspiration of the Italian and the French schools. In the first instance, the Italians, during the fifteenth and sixteenth centuries, had, by their genius, pervaded the whole of Europe, and sent great numbers of eminent men to different countries; so that much of the architecture of Spain and Portugal was due to their taste. Since the French revolution, and after the establishment of a School of Architecture in France, by Percier and Fontaine, a vast number of its pupils were distributed over Spain, Portugal, and parts of Germany, and carried French taste to those countries, and superseded the Italian. With respect to the railway stations in Madrid, no doubt the utilitarian principle prevailed there, as was the case in London. The railway stations of our metropolis, with one or two exceptions, display very little magnificence of taste, however skilfully designed for their purposes. But the station of the Chemin de Fer du Nord, the most recently erected one at Paris by their friend and M. Hittorff, possessed one of the most magnificent façades executed in stone, of a monumental character, and enriched with sculpture. With respect to the communications received from the Chevalier Da Silva and M. Delsaux, he would remark, that they were both men, who had distinguished themselves for the manner in which they had conceived the works entrusted to them in Lisbon and Liège. There was, no doubt, in the latter city, the government would do very little in the way of public works. There was a spirit of enterprise amongst the manufacturers there, which induced them to undertake all their great works for themselves, and to carry them out with taste; but, at the the same time, there was no doubt, that those works would reflect somewhat the mercantile spirit of the place. He came now to say a word with respect to the communication received from M. Cluysenaar, relative to Belgium, and especially the public works now being prosecuted in Brussels. That gentleman had written as one who knew what good art was, and as such they must accept his judgment, but when they heard that the new Courts in Brussels were to cost the large sum stated, they must feel surprised. The truth was, architects abroad were too frequently led to regard these matters too much in a monumental aspect. At the same time, we could not complain of the tardiness of those works, when we consider the length of time that the projected Law Courts in Lincoln's Inn had been in hand. During the last twenty years, various votes of Parliament had been taken, and various valuations made in respect of that project, and he recollected the active part which the late Sir Charles Barry, and others, had taken in this matter. The Institute was to be congratulated upon those communications, and he was sure their thanks were due to their Honorary Secretary, for having been so good as to elicit them and bring them under their notice.

Mr. Robert Kerr, Fellow, thought their thanks were eminently due to Mr. Nelson for the excellent precedent he had set, in the collection of extremely practical and useful information, which he believed would be very useful to the members of this Institution. He had, therefore, great pleasure in supporting a vote of thanks to Mr. Nelson.

Mr. W. A. Boulnois, Fellow, seconded the proposition, and remarked, that in regarding the progress of architecture in France, especially in connection with the munificent expenditure on the public works of Paris, they must be struck with a sentiment something like this—that "Heaven sends meat, and the devil sends cooks;" inasmuch as the architects of France were carrying out that expenditure in so wasteful a manner, and with so little variety, as to strike the mind of every educated architect with regret. When they went to Paris, and noticed the building which the President had praised, but which he (Mr. Boulnois) was sorry to say he could not join in thinking a fine one, viz., the Station of the Chemin de Fer du Nord—when they saw also the wasteful way in which space was used there, and the absurd façade with only about twenty feet of depth of solid buildings behind it, then they would agree with him, that if the Government took a little more pains to put matters up to competition it would be a great thing for the monumental architecture of France in general. This remark, he thought, more particularly applied to the New Opera House at Paris.

Mr. G. R. BURNELL would remind the speaker that the Station of the Chemin de Fer du Nord was not a Government building, while the Opera House was so, and the designs for this latter building were put up for competition.

Mr. BOULNOIS added—then he thought a judicious selection had not been made, inasmuch as an acre and half of ground was occupied by an opera house, constructed at enormous expense, which was not, as respects the audience portion, so well arranged, and would not hold so many people as Covent Garden. He entered his protest in favour of the English architect, who with small means at his disposal, in his opinion, employed those means in a much better manner than their continental brethren.

Mr. JOHN W. PAPWORTH, Fellow, thought that the remarks made by Mr. Boulnois resolved themselves into the assertion that an English taste did not admire the peculiarities of French art, as now exhibited; but Mr. Boulnois must admit that if any French architect were present, and were to say, "French art has a national character, but the English architects are being told to invent their art of the nineteenth century," our foreign friend would appear to have the best of the argument. Mr. Papworth believed that the business character of the English had produced, to a great extent, that invention, in a manner which satisfied the requirements of a people who at least understood what it wanted. Thus every English civic building, whatever its class, was designed for the peculiarities of the townspeople; whereas, it seemed to him, that in France the number of the population determined the class of the building, *e. g.*, a town with 50,000 inhabitants would have an hôtel-de-ville of the same type of that in any other town equally populated, although the external design might be different in various respects. A foreigner could reply to such criticism, that in France national character was so far stereotyped that every town with 50,000 inhabitants had similar wants, or at least, under existing circumstances, ought to have them; and these words, "under existing circumstances," led him to suggest that the communications which had been just read contained two points worth discussion. One was the notion that a monument, such as a statue on a pedestal, invariably ought strictly to harmonize with the buildings of the *place* in which it was situated. He was ready, if any one present would take the other side, to offer his reasons for thinking that a decided contrast would be preferable to the uniformity which seemed to prevail wherever the government was essentially military. The other point was the notion that commerce and monumental art could not be combined. If by monumental art was meant merely the application *de rigueur* of the time-honoured orders, there was no objection to the dictum, but he hoped that the proposition really meant that "art could not reasonably be applied to buildings for commercial purposes," and that was a proposition which he should be sorry to believe could be held by any continental architect; for it must be allowed, that in modern times, or at least ever since Dance had made Newgate look like a prison, the English architects had succeeded in showing that the application of art in giving beautiful character to the most prosaic subject, to the dullest of warehouses, did not really involve, on the part of the client, an expenditure that would be calculated as an item of so much per cent. upon the necessary cost of the work.

The vote of thanks to Mr. Nelson having been unanimously passed, that gentleman expressed his gratification at the manner in which these communications had been received, which he said would encourage him at a future time to lay before the members equally interesting matter, which had been transmitted to him from Germany. With respect to the criticisms that had been passed on the subjects presented to them, it should be borne in mind, as had been already suggested by the President, that a different policy prevailed on the continent to that which obtained in this country, which called for different arrangements to those to which we were accustomed. There was a well-known song, called the "Marseillaise," and he had no doubt the construction of these lines of communication were carried out with the idea of no more barricades and no more "Marseillaise," and the same might be said with regard to Paris.

A FEW SUGGESTIONS ON THE INTRODUCTION OF COLOURED BRICKS, ETC., IN ELEVATIONS.

By Henry A. Darbishire, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, January 23rd, 1865.

THE following brief remarks, which I have the honour of submitting to you this evening, have been prepared with the hope that the interest of the subject to which they refer will be received as sufficient excuse for their intrusion upon your attention, and that they will give rise to a discussion, which shall yield much valuable matter for the guidance of all who are practically engaged in employing coloured bricks as an effective and inexpensive architectural enrichment. They have been suggested at intervals, during long railway journeys, when reading has become wearisome, and a good look out of window has relieved the monotony of confinement. By a good look out, I do not mean a vacant stare at nature in an uncomfortable state of perpetual motion, but a wide awake look out when the senses are alive and active, and the mind is both ready and willing to receive impressions of objects as they are presented in rapid succession. It must be admitted that a transit of forty miles an hour is not favourable to accurate observation of details, but leading features can be easily distinguished, and a traveller may determine, without effort, the outline of a mountain, the foliage of a wood, or the form, general proportions and colour of a building. If his observations be confined to buildings, I think he will lack neither amusement nor instruction. Among many other things, they will teach him to criticise their merits and imperfections by the same rules which influence the criticism of that large and important section of the community, the general public; for they will reveal to him only those features and characteristics which are most prominent, and therefore most apparent and intelligible to critics, who are not fully acquainted with the laws and practice of architecture.

The lesson taught by this partial revelation is well worth learning and remembering by all whose attention is especially directed to architectural design. A little knowledge is a dangerous thing, but so also is too much. Over refinement and elaboration of detail, arising from an intimate acquaintance with beautiful examples, will often weaken and destroy the effect of the bolder and more undisguised features, which render a work attractive to the less initiated; and designers should bear in mind that, however great may be the temptation to allow an unchecked fancy to guide their pencil, it is not for the microscope of the artist or the antiquary that they labour, but for the critical eye of a discerning unprofessional public; a public, too, possessing an inborn interest in bricks and mortar and all other matters architectural, and believing itself fully qualified, if not by study, at least by nature, to approve or condemn any building that may rise above the surface of the earth. I cannot tell whether it is because bricks and mortar, stone and wood, iron and glass are so constantly before men's eyes in their natural and undisguised simplicity, are in fact, so very common-place, that the possibility of their being combined so as to create mystery never enters the imagination, but certainly it cannot be doubted for one moment, that of all critics, architectural critics are the most numerous, and that they constitute about nineteen-twentieths of that general public to which I have refereed. The great painter who has just been removed from us, Mr. David Roberts, always held the opinion that interest in matters pertaining to architecture was all but universal; unfortunately, however, while he acknowledged its extent he did not highly appreciate its value, for he once remarked that "the public talk much about painting, they know little about that; they talk more about sculpture, they know less about that; and they talk most about architecture, but they know nothing in the world about that." This is almost as severe as Walpole's well known satire upon public taste. "Public taste," he said, "is the taste of the public, which is a prodigious quantity of no tastes generally governed by some exceedingly bad taste."

Now, although it may be admitted that the public generally possess very little accurate knowledge of architectural technicalities, no one, I think, will dispute that the judgments which they pass upon those features of a building that are clearly defined and easily comprehended, are in the majority of instances just and impartial, and it may be taken for granted that if a work satisfies the public, it will be found to possess a good deal of real merit. I think it is Sir William Temple, who says that none but the weakest of mankind pretends to be indifferent to public opinion. He regards a proper deference to its authority as the best evidence, not only of common sense, but of a good heart. Those who are engaged in producing works, which are to become, as it were, public property, should be the last to despise its influence; and it not unfrequently happens that, rather than forfeit its favour and approbation, they will make every effort, even when circumstances are most adverse, to produce something which shall be, if not admirable, at least void of offence, and possessing some merit, indicative of study and care.

It becomes an object then, of no slight importance, to discover, if possible, how public gratification, or in other words, favourable public opinion, may be secured and increased by the adoption of means which are easily accessible. To accomplish this object it is necessary in the first place, to ascertain with tolerable accuracy, what features in a design are most easily comprehended and approved by an unprofessionally educated observer, and in the second place to discover the means of rendering them easy of adoption: the first, as I have already said, I believe can be done without much difficulty by a rapid survey of the buildings which troop past any railway carriage window: but the second, viz., of bestowing upon them prominence and effect by the employment of simple and economical expedients being much the harder task, can only be undertaken, with any hope of success, by those who have been actually employed in carrying designs into execution. As we have not time to devote attention to more than one of these features, we will take the most conspicuous, viz., colour; not its redness, or blueness, or greenness, but its blackness and whiteness, its light and its shade, its lights and its shadows, produced by the exposure of its various and irregular surfaces to the fair light of day. Admitting this interpretation of the word as acceptable, the importance and influence of colour cannot be denied. How endless are the resources, how lavish the means employed to secure it; how exquisitely varied and beautiful are the results which it is powerful to obtain, and how miserable the effects of failure from a misemployment of its coveted agency. To produce colour the attention of thoughtful minds has been occupied, to a greater or less degree, from the earliest ages. Ochres and chromes first tried to accomplish the feat, whose chief glories were reserved for Greeks and Romans and those great workers in Gothic art who succeeded them. To what other source than to the love of colour and a high appreciation of its value can we trace those beautiful architectural mouldings and enrichments which our forefathers and freemasons have bequeathed to posterity. The waves of the sea, the bones of the human body, the great sun itself they lovingly studied, and learnt from their delicate outlines to combine the cyma, astragal, and circle into forms so bold and yet so delicate, so complex and yet so simple, so various and yet so uniform, that "they weary never, but are for ever new." Is it possible that the value and importance of colour in architectural works can be over estimated by those who care to observe its effect in any of our principal squares or thoroughfares? Do not these afford sufficient proof, if proof were wanting, that its power of bold assertion can destroy all unity and proportion in those attributes which are less obtrusive, but which are nevertheless quite as deserving of consideration? Our streets and squares are literally striped with every conceivable tint the painter's brush can give them. Blacks and greys, in endless variety, alternate with whites, yellows or buffs according to the fancy or finances of their occupiers, and by their prominence mutilate continuous lines of detail, as effectually as if they were actually broken and disconnected by difference in their design. How few persons would believe that the building on the west side of Trafalgar square, for example, is really a uniform and regular composition. That portion which is occupied by the College of Physicians is so black, and the remaining two-thirds, belonging to the Union Club, is so white, that none but a critical professional observer would detect any similarity in the two divisions. To all appearance they are separate buildings, and if either of them were burnt down or removed a hundred miles away, the other would remain unaffected by the loss. If it be necessary for a building, or a group of contiguous buildings to be coloured, the colour should be limited by the lines of their architecture, and subject to the conditions which they prescribe, as it is on the Continent, and especially in the towns on the Mediterranean, where the streets are full of colour, as varied, certainly, and very much brighter than they are here. There colour is subservient to the architecture, here it defies and overcomes it.

In large buildings, where both space and means are liberally supplied, bold projections and deep recesses distinguish, by well defined masses of light and shade, the most prominent parts of the design from these of inferior importance, and these again are relieved by rich and delicate details radiant with lines and intracaries of light, which mark out the general proportions and subdivisions of the whole. Basements and entablatures, string courses and cornices, with all their attendant accessories of granite columns, marble capitals and finely polished surfaces upon which the sun-light loves to linger, all contribute their bright and varied gifts of color so cunningly disposed, as to redeem the plainest work from monotony and the most elaborate from becoming dull.

In ordinary buildings, by which I mean buildings of ordinary size, built of ordinary materials and appropriated to ordinary purposes, the case is altered. For them space is usually confined and funds too often scarce. Bold projections and deep recesses give place to uniform and unbroken surfaces, polished stone to common brick, and richly clothed moulding to naked arrises. What then becomes of colour ? does it too, take flight, and leave all barren ? Not in the least. Railway observation teaches that, in ordinary buildings, and especially in those of the most diminutive proportions, colour abounds to an extent almost bordering upon monopoly, and not merely colour as hitherto defined, blackness and whiteness, light and shade, but rainbow colour, green, blue, red, black and purple, distributed into every conceivable pattern, and subdividing every surface to which it is applied into as many squares and parallelograms as a Kidderminster carpet. As this colour is literally applied colour,. and is not originated by skilful combinations of the various associated portions of the design itself, its independent obtrusiveness especially arrests attention and lays claim to a few words of consideration.

It is generally produced by variegated bricks and tiles of beautiful manufacture, and often of careful and elaborate design, obtainable at comparatively small cost, and easily worked in with building materials of the coarser and more ordinary descriptions. These desirable qualities necessarily render them popular, but at the same time subject them to the liability of being employed by the unskilful and unconscientious designer as available agents for obtaining what may be called "ready-made" effect, and relieving him of a load of inventive and thoughtful labour. This constitutes the chief danger by which their attractions are surrounded, and offers the readiest explanation of the cause of that disappointment which appears to be inseparable from their employment as architectural decorations. Careful study, matured judgment, and faithful observance of those fixed principles of design which none can disregard or lay aside with impunity can alone render them really valuable and satisfactory accessories. No drawing, however careful or elaborate, can convey a correct idea of their effect in an executed design. They are too small, and their ornamental details are too minute to be indicated upon paper, and like diagrams of encaustic pavements or marquetrie floors they entirely mislead the mind, by confusing the eye with a complicity to which it is unaccustomed. And here we may observe, *en passant*, that architectural drawings often create great mischief, lead to large and unnecessary expenditure of money, and are generally the most illusive and discouraging of all the rewards allotted to persevering labour. How much do they demand of time, patience, thought and anxiety; how little, how miserably little, do they return in acknowledgment! Few will fail to acknowledge that the most disappointing buildings are too frequently traceable to the pencil of the most perfect and accomplished draughtsman, to whom foregrounds, middle distances, skies and trees offer no obstacles, while works estimable and most worthy of approval owe their deserts to drawings apparently crude and insufficient. It is the degree of acquaintance with true and immutable principles, and the power of realising in the mind's eye the effects which certain combinations of form and colour resulting from the application of these principles will produce when actually carried into execution that, in my belief, constitutes the great difference between one designer and another, and only to him who has this power in the highest degree would I entrust the employment of coloured bricks and tiles as agents for the production of any facial enrichment, however unimportant. Misapplied they will not only lose their own value, but they will diminish that of features possessing more real importance in their immediate vicinity, and we may be sure that they are misapplied in a building wherever they interfere with the distinctness of its architectural forms and proportions, or the shadow lines which they have been designed to create. They must be used as accessories and subordinates only, not as principals; and not only this, they must be used as accessories apparently indispensable, whose absence would be felt and regretted.

To explain my meaning more clearly, and as I have purposely avoided reference to drawings, I will take an example from the most numerous class of ordinary buildings, which may be called the diminutive domestic class, and which includes that model of perfection, the agent's delight to advertise as "a most desirable villa residence," possessing all the advantages and disadvantages of the architectural sliding scale which begins with a palace and ends with a cabin.

As we are not concerned with the interior arrangements of a vestibule, hall, double drawing room, dining room, breakfast room, billiard room, library, conservatory, observatory, and boudoir, or with the surrounding attractions of terraces, shrubberries, gravel walks, fish ponds, plantations and flower beds, with gods, goddesses, urns and fountains interspersed over the entire domain, which covers at least half an acre in extent, our attention must be confined to the external appearance of the building itself.

The principal elevations are generally about five-and-thirty feet in length, and of a proportionate height. As plain surfaces are considered objectionable, the wall spaces are crowded with lozenges, crosses, and unintelligible diagrams of every description, and are broken up by gables, gablets, bow windows, bay windows and oriels, porches and glazed colonnades, till a square foot of repose is sought for in vain. The dissecting process is extended to even the smallest details, and so effectually are these subdivided into minute and inappreciable parts that plinths, strings and cornices lose their value as distinctive features, and are lost in a confused and unintelligible conglomerate. The confusion necessarily arising from this dissection of small wholes into still more insignificant parts, if not solely attributable to the employment of coloured bricks, is very materially assisted by them. Assuming that they are similar to common bricks in every respect except colour and, perhaps, fineness of texture, the very uniformity of their dimensions and the variety of purposes to which, with this drawback, they are applied, renders it impossible for them to accomplish successfully all that is expected from them. It is not because they are valueless, but because their value is not properly estimated that they so often produce such unworthy results. In small buildings of the class which has just been described it will be found, almost without exception, that if they are used as mere flat facial decorations they are so disposed as to partition the wall spaces into as many squares as a chess-board; if they are employed as angle quoins, they are stepped in blocks so large as to reduce the apparent height of the elevations; if they are introduced as enrichments to door and window openings, they interfere with their proportions; if they are substituted for moulded bands or string courses, they are either coarse or unintelligibly minute; if they are employed in the construction of arches, they destroy the continuity of line upon which the chief beauty of the arch depends; if they are inserted among the interspaces of cornices, extraneous entablatures, or other similar groups of mouldings, they perplex their shadows instead of adding to their significance and depth; thus it may be fairly admitted that unless their introduction be undertaken by those who are aware of its difficulties and are able to overcome them by the power, which sufficient knowledge and well educated taste alone can supply, they cannot fail to create disappointment and regret, and cause their entire absence to be more commended than deplored.

It may be well, before proceeding further, to ascertain how far the foregoing assertions are justified by facts, and *First*, as to the employment of coloured bricks, &c. as facial decorations, by which is meant their arrangement upon flat and uniform wall spaces into various fanciful devices, obtained by colours in contrast with the wall itself.

If a wall be broken up by several openings or projections the interspaces become numerous and consequently of limited size. These interspaces are the principal divisors of a building, and as they define not only its linear proportions but receive those shadow lines which no rule and compass can control, and which vary with each passing moment, it is most desirable that their distinctness be acknowledged as an attribute of value and preserved inviolate. Lines of demarcation, however boldly expressed upon paper, too often vanish like shadows before the sunlight, which recognises no lines but those determined by the substantial realities which oppose it, and whose opposition creates a progeny of new lines full of beauty and variety, and from their extreme delicacy demanding the most careful protection. Confused wall spaces will cause confused shadows, vague and undefined, void of depth and transparency, and robbed of all the clearness which renders their delicacy so attractive. It may occasionally happen that the sizes of the wall spaces may vary considerably in the same building, and that some may be so much larger than others and so much more exposed, as to render it desirable to relieve them by introducing monograms or other devices of a similar character. When this is the case the colour of the wall should be first considered; if it be dark, the devices should be darker; if it be light, they should be lighter; for instance, in a red wall the devices should be executed with black bricks; if it be a wall built with the common yellow stock bricks, best known in London, they should be executed with Suffolk or Bath bricks, so that in neither case may they present too glaring a contrast. Generally, however, wall spaces should be as plain and unconspicuous as possible, and it requires but little art to render them so.

Secondly. As to their employment as angle decorations or quoins. It too frequently happens that the desire to employ coloured bricks in situations generally assigned to stone, causes the uniformity of their dimensions to be overlooked or disregarded. This is especially noticeable where they are introduced as angle quoins, where they are massed together in blocks fourteen or eighteen inches long, by twelve inches in height. These proportions are usually observed because they work well with the general construction, but they are too regular for beauty, and so large as to give a false scale by which to estimate the size of the elevation. Usually the bricks are of a lighter colour than the general wall face, and this prominence renders their disproportion more apparent. In buildings of moderate height they assume the appearance of steps, by which the eye is enabled to ascend from basement to roof by gradations so easy and regular that it has leisure to measure each foot as it rises, and refuses to accept any assertion of size, but that whose accuracy has been fairly tested by its own observation. This, it must be allowed, presents a strong argument against their employment as quoins, but it is not so serious as to justify their banishment from this office. If they be only treated as bricks, and not as representatives of stone, and if their colour be selected with judgment, they will prove both ornamental and useful assistants. In order that they may avoid the offence of affecting to be that which they are not, they should be jointed like the rest of the work; but if they differ from this in colour, as they may do, the mere alternations of header and stretcher will present a poor and meagre appearance unless a closer be introduced to render the regularity of the sub-division less evident. Their colour should harmonize with that of the general wall face, and not present any striking contrast to it. Like the ornamental devices already mentioned, they should be darker than the dark wall and lighter than the light one, and so avoid the stepping-stone appearance which their uniformity in height might be apt to suggest. Before leaving the subject of quoins, we may observe, that wherever coloured bricks are employed at the angles of a building their value may be considerably increased by rounding their external arris into a quirked bead, so that the sharp cutting line, which offends in all new work, by its rigidity, may be softened and refined.

Thirdly. As to their employment as enrichments to door and window openings; not very long ago I was required to execute a design, in which it was considered important that the door and window openings should be ornamented with red bricks. The walls were of common yellow stock bricks, and the colour selected for the door and window jambs and arches, of a modest, inoffensive red. For economical reasons Suffolk or Bath bricks were out of reach. When the building was finished, the critics appeared, and, as a matter of course, expressed their opinions without reserve. None of these were unkind or unjust, but there was one whose criticism was too pertinent to be forgotten. After taking each portion of the work in its turn, he drew attention to the "*opthalmic*" appearance of the doors and windows. The next time I saw them, their affliction was apparent, and my attention once roused, I soon became unpleasantly aware that mine was by no means the only building suffering from the complaint, and that opthalmia, proceeding from the same cause, abounded. Consideration of its prevalence led to the conclusion that, if coloured bricks be employed as enrichments to door and window openings, they must either be limited by definite lines, maintaining proportions, which have relation to the openings themselves, or when these cannot be obtained, their limits must be left so vague as to prevent their suggesting that proportion was attempted, but could not be secured owing to the difficulties inseparable from its accomplishment. We need not be reminded that if a door or window receive any kind of decoration beyond its clear opening, the proportions of the decoration will materially affect those of the opening itself, and especially if the colour of the decoration be conspicuous. Coloured bricks are, for this reason, most unmanageable. Unless they are purposely moulded or cut for adaptation, like stone, they ought to be applied only to those openings, which are multiples of their own dimensions. As moulded and cut bricks are not those under present consideration, the established length, breadth and thickness cannot be set aside; and while admitting the efficacy of the limits assigned to each of these, for the purposes of construction, the doubt arises as to how far they are qualified to supply the elements of good proportion. This doubt is strengthened when we consider them—

Fourthly, as substitutes for moulded bands and stringcourses. Three inches, the accepted thickness of a course of common brickwork may be termed the small divisor of the vertical subdivisions of an elevation, and any bands which may be introduced to give these subdivisions prominence, must necessarily be multiples of three inches. For the bands of low buildings three of these divisions will be sufficient if they are flat; but when their outline is varied, four at least are required, as their increased projection renders it necessary for the uppermost course to be weathered. Unless the band be of considerable length its depth of twelve inches will appear disproportionate, for, supposing the weather course consist of headers, which is not desirable, and it projects four and a half inches from the face of the wall, which is as much as it should do, but little variety of shadow can be obtained below it, not sufficient, certainly, to redeem it from heaviness. The distribution of a twelve-inch band, which was often adopted by the old builders in brick, and which appears to be the simplest and most effective, is three inches for the weather course; three inches for the ornamental course, either saw tooth, billet mould, or dentils, and underneath a plain course of six inches to receive their shadows. In modern works, the third course is frequently flush with the face of the wall, and the lowermost course projects two and a quarter inches so as to serve as a necking. This arrangement possesses the advantage of giving to the ornamental course the benefit of its entire projection, but at the same time it divides the twelve inches into four equal lines, each of which is only three inches in breadth. To avoid the difficulties attending the unalterable limitation of three inches, another plan has been adopted, which few will allow to be very successful; it is that of enclosing nine-inch square variegated tiles between two fillets of cement, each fillet being an inch and a half in breadth. There are instances (and one building in the city is especially noticeable) where cement has been most effectively and almost legitimately combined with the brickwork so as to serve all the purposes of stone; but these are so rare that their exception only proves the rule, that the employment of cement in brick buildings ought to be carefully avoided. With regard to the tile decoration, it may be said that, unless its design consist of simple, well defined forms, expressed by well contrasted positive colour, it will have a weak and unmeaning appearance. The more complex, and it may be the more delicately beautiful the design when close to the eye, the more ineffective and disappointing will it become when removed from it. Tile bands or strings are, moreover, generally so refined looking that they seem unable to accommodate themselves to the requirements of their coarser neighbours. They look isolated and out of place on a bare brick wall, and suggest the unsatisfactory idea of being applied without sufficient purpose. This impression is strengthened by their tints being of a character so entirely different from that of the finest coloured bricks. The eye will follow colour, wherever it may be, as inevitably as the needle will follow the pole, and the more attractive the colour, the more inattentive does the eye become to surrounding attributes, however important, so that it is really of much consequence that the colour afforded by ornamental bricks and tiles should be carefully and judiciously applied.

Fifthly. As to their employment in the construction of Arches. Arches appear to offer peculiar facilities for the exhibition of the wildest vagaries. In the buildings to which especial reference has been made, they are coloured so as to look like pyrotechnic displays than anything else. Blacks, reds, yellows and whites alternate as in a catherine wheel, but their combination is far from being so satisfactory. Instead of preserving the arch line, they sever it into segments, and by destroying its continuity, deprive it of its beauty. By some strange spirit of perversity their arrangement is so distributed that the darkest colours are where the light should be, and *vice versâ;* the key stone being quite light, and its adjacent voussoirs quite dark. This transposition effectively divides the arch into two parts, falling away from each other, owing to the absence of a crowning member to unite them. As the construction of arches necessitates the employment of bricks of finer quality than those required for the walls, a great temptation is offered to make them injuriously conspicuous, by giving them prominent colour. An arch to be useful must have its voussoirs of a certain depth, and to give it the appearance of stability, they should have something definite to spring from. If their depth be proportionate to the width of the arch, the proportions of the opening will remain undisturbed; but if they are not so—and they certainly cannot be where the openings are small—they will create a heaviness and depression of the most objectionable kind. It very seldom happens that the breadth of a brick arch can be made to bear a just proportion to the width of the arch itself, and as the probabilities are so strongly against it, it were better to render an evil, which is almost inevitable, as little offensive as possible, than to expose it to censure by making it unnecessarily prominent. The simple intrados of any arch, whether it be a semi or pointed, is sufficient to assert its claims to admiration, and it is very questionable whether any enrichment, except that afforded by delicately cut and sculptured mouldings, can materially contribute to its beauty. Again, in order to secure some apparent springing line for an arch flush with the wall face, one of two courses must be adopted: either the colour of its voussoirs must be continued vertically throughout the length of its jambs, or it must be carried horizontally by a band fulfilling the duties of an impost mould. In ordinary buildings the latter is the simplest and most common, but it not unfrequently happens that instead of the band being flush with the voussoirs, it is made to project before them so that it assumes more of the character of a string-course intercepted and broken at the openings than that of a member intimately associated with them. If a series of bands thus employed as springing lines occur at two or three regular intervals, they may improve the appearance of a building by adding to its deficient length, and diminishing its excessive height. In the neighbourhood of large towns, where land is so valuable that it is necessary to economize every foot, and to build as high as possible, they may be introduced with considerable advantage, provided that they do not offend by prominent colour or pretentious elaboration.

Sixthly. If they are introduced into the interspaces of cornices, extraneous entablatures, or other similar groups of mouldings, their arrangement and design must be bold and well expressed. Minute and elaborate prettinesses will not only be ineffective, but they will, by their own indistinctness, disturb and confuse any shadows that may fall upon them. In cornices of good projection and where the mouldings are not very delicate, they may be employed with great advantage, provided that their colours are selected with reference to their position; for instance, by executing the boundary lines of a metope or panel between the consoles of a cornice, with darker bricks than the portion so enclosed, the panel will appear recessed, and the console thrown forward, because the shadow of the latter will receive increased depth and value from the colour of the bricks with which it corresponds. Again, in bed moulds underneath dentil courses a simple alternation of light and dark colours may be made to produce great richness with very simple means, if the effects obtained by the natural shadows be well considered and increased by unobtrusive art. Generally speaking, if coloured bricks be employed alone and not thrust forward into positions where they are not required among details of intricate and delicate section, and if their colours are disposed so as to be suggestive of some uniform principle of design, their services will not fail to be recognized and gratefully acknowledged. It is because they are cheap, attractive, easily accessible and available for so many various purposes, that they become exposed to all the indignities which ignorance or indolence can inflict upon them.

Except ecclesiastical buildings, where their merits have indeed received the fullest recognition, there are none which are more confirmatory of the views expressed in the foregoing remarks than some of the large mills and manufactories that have been erected during the last few years in and around many of our principal towns. Built though they be of the plainest and most substantial materials, and as devoid of all expensive and elaborate ornament as is consistent with their practical character, they nevertheless present features which command the highest admiration. There is a really grand mill near Wigan, in Lancashire, which I never pass with indifference, where coloured bricks have served the purposes of its designer well. They define its main proportions; they maintain its leading lines; they give variety to its long flat walls; they confer importance upon its almost countless openings; and they dispose themselves so as to create bold, rich and most effective details; in short, they do all that coloured bricks ought to do, and nothing more. This estimable work has not been produced without a careful and studied application of the true principles of design. With all its attractiveness, it is evident that its cost has not been overlooked. While every feature performs, and faithfully performs the duties assigned to it, there is no appearance of lavishness or unnecessary profusion. Brain has done more for it than money; the designer's head, and not his employer's exchequer, has honoured the heavy drafts which have been made on its account. It may be urged that the vast dimensions of the building, the unbroken character of its leading lines, the regularity of its openings and wall spaces, and the simplicity of its requirements in matters of detail and ornament, all help to save it from the mistakes and incongruities which deface the "villa residence" in its vicinity. This may be the case, for it cannot be denied that in some respects it possesses advantages superior to those of its humbler neighbour; but the fact cannot be doubted that, had the same ability and knowledge been brought to bear upon both works, their estimable qualities would not have been so widely different, nor would they have been regarded with such unequal feelings of respect.

We have now considered the application of coloured bricks to two classes of buildings,—to small domestic buildings and to large manufactories. They have been selected from many others because they represent two extremes; the first being the exponent of the worst, and the second of the best results producible by the introduction of positive colour for the purpose of architectural enrichment. It were useless on an occasion like the present to do more than to specify a few of the characteristics of each of these classes, and to direct attention to the means which have been employed to destroy all the attributes of beauty in one, and to confirm and multiply them in the other: to take into consideration all the other classes in which coloured bricks have lately been made to perform so prominent a part would be simply impossible; but before concluding I may be allowed to refer to one, not purely architectural, but of great and ever increasing importance, and deserving of the best consideration of those to whom it must ever be most interesting. It need hardly be said that we refer to railway buildings, viaducts, bridges, and principal stations, which are of great size, of regular and expressive outline, and generally constructed of bold and simple materials. These characteristics present unusual facilities for obtaining effective decoration by the employment of the economical means which coloured bricks supply, and it is much to be regretted that these means have so seldom been employed. Much might be said of the indifference which so many of our leading engineers have shown in all matters relating to the æsthetical portion of their works; if they prove satisfactory in solidity and structure their attractiveness, or rather its contrary, is totally disregarded. A large contractor once remarked that he preferred undertaking work under an engineer rather than under an architect, because the former afforded more profit and less troublesome detail. This craving for profit is not peculiar to contractors, and has more to do with the deforming process under which our great capital is at present suffering than ignorance of the means by which it might be avoided, or at least mitigated. Still profit and beauty are not so inconsistent as some are prone to imagine. If engineers and architects worked together upon the designs, which are confided to the care of the former only—and certainly their gigantic proportions justify such a combination of effort—there would be fewer of those incongruous combinations and offences to good taste, which increase in number and importance day by day.

Mr. John P. Seddon, Hon. Sec., said that he fully admitted the difficulties which stood in the way of using coloured materials in buildings, and more particularly coloured bricks; doubtless it was easier to produce a good effect with them in large and simple buildings such as the mill Mr. Darbishire had mentioned, than in smaller ones like villas, but in any case polychromatic architecture needed the greatest care, attention, judgment, and taste. It was as difficult to produce a really beautiful effect of colour in building as it was in a picture, and the architect laboured under this additional disadvantage to those which beset a painter,—he could not mix his colours for himself, but must remain content with but an approximate result to what he had intended or designed. He had himself used with some satisfaction coloured bricks from the Poole Potteries, and some such material, which should be unglazed, if possible, would be the best for the purpose; and he believed that such manufacturers as Messrs. Minton and Messrs. Maw were capable of executing satisfactorily any designs submitted to them, and that it now rested with architects themselves to study and develope the subject. It was earnestly to be desired, however, that none would attempt it who did not possess that first essential,—unfortunately rare in the present day,—a natural eye for colour, and those that did must make up their minds to incur a vast amount of labour, for if attempted at all, the system necessitated a careful consideration of nearly every stone or brick in a building; but given both the taste and the labour, the result would, he believed, repay the expenditure of both.

Mr. E. I'Anson, Fellow, having been called on by the Chairman, said he had found this too difficult a subject to take up. He had seen a large building erected by Mr. Somers Clarke, near Wanstead, in which coloured bricks had been largely introduced, and he regretted to find that Mr. Clarke was not present so as to explain the principle which had guided him.

Mr. Thos. Morris, Associate, said this subject seemed to him one of exceeding interest. He would express his own views as to architecture proper. Pure architecture, he thought, should be constructed without reference to colour. The architect ought to feel that he could work out all his intention in the material without colour, simply by the proper forms and relief: that he should be able to convey meaning and intention to colourless material. But he thought they must have remarked in the course of architecture in England that there had been at all times a desire to depart from the monotony of one single material. In the Early English state there was a constant desire manifested to relieve the light coloured stone by the introduction of dark polished shafts of Purbeck stone, or other kinds of materials, so to afford relief by a change of material. Then there was a further effort made to obtain the same kind of relief by the introduction of bands of darker materials. These were carried not only through the walling, but into the arches and groins where opportunity of doing so occurred; and thus that relief was secured. Reticulated chequered walling was a further attempt at surface relief; but until very lately there had been no great attention paid to coloured materials, and colour was a dangerous element to deal with. But he thought before this century closed there would be a development of coloured architecture such as perhaps had never appeared before, so that the architect would be able to work with the additional charm of colour. To look well, colour must be temperately used; but he thought that at the present time there were great facilities afforded for its use, for they had the opportunity of knowing the value of terra cotta; and in addition to this, Mr. Minton had shown how successfully he could imitate the beauties of majolica ware and the works of Della Robbia, Palliser, and other celebrated potters. By means of these new materials introduced in bands and string courses, they would be able to produce, with very little difficulty, effects of colour with purity and beauty, such as had not yet been attempted. He felt persuaded there must be gentlemen present who had carried out this kind of work to a considerable extent, and he hoped they would not sit down, and leave only their works to declare the attention they had paid to this subject.

Mr. C. F. Hayward, Hon. Sec., said it had been just remarked that before the present century was out it was probable they would see a development of coloured architecture such as had never been witnessed before in this country. He thought they had a considerable development of it already, if they looked at some of the party-coloured buildings recently executed in London. He was afraid he must plead guilty to having done a little in that way himself, but in excuse he might observe that it was excessively difficult to get one's ideas carried out properly, and one found constantly the bricklayers putting in ideas of their own. It continually happened when variegated brickwork was used, that in cleaning down a building the bricklayers took especial care to paint over the surface of the black bricks or the blue Staffordshire bricks with some thick black paint, giving a dull heavy tone in place of that soft or silvery gray tone which black headers from the kiln usually had, resulting from their slightly vitrified surface, and this paint was unfortunately so adhesive that no weather seemed to wash it off, and not even London dirt to efface it. There were walls in London now of his own construction which were a continual annoyance to him on this account. Of late there had been introduced into the London market an adulteration, if he might so say, of the genuine black 'headers,' a certain kind of soft black brick, termed '*cutters*' because they were intended to be used chiefly in archwork, and which he believed contained a large amount of magnesia, or other colouring matter. He never allowed these to be used if he could help it, though he found sometimes they were quietly brought on the works, and were not discovered to have been used till after the walls were built. These bricks reversed the very principle which was sought to be carried out by the use of black bricks in the glorious old Elizabethan houses, where they were worked into the surface of the walls as permanent decoration, and often outlasted the rest of the brickwork, owing to the extra hardness of their surface By the use of these dead-looking black 'cutters' not only was the whole desired effect destroyed, but when they intended to use bricks of a harder and more durable character they had foisted on them these soft bricks, which were less durable than those forming the rest of the wall. Generally speaking, the simplest kind of good brickwork always looked the best, and the less moulded bricks they used the better the building would be. It was astonishing how easy it was to make a brick building attractive with nothing more than common red and black bricks; and he thought the more they used grey or yellow bricks, or bricks of several varieties of tints, the worse the general tone of the building would be, and certainly much greater study was required to obtain any breadth of effect or get anything but a patchy appearance, more particularly if there were many breaks or openings. It was a curious fact which he had remarked, that in brick countries they invariably despised the material which their own district produced, and imported bricks of another colour for their own buildings. Thus wherever red bricks were made best they imported white, and where the best white bricks were made they preferred red, and where they had good grey bricks they imported white and red for building at an increased cost; but in some parts of Essex, where the carriage was too expensive, and so only the red bricks of the district were used, the effect of some of the simple walls with only a few kiln-burnt headers put into them was as perfect as could be desired. He thought it somewhat remarkable that Mr. Darbishire had not favoured the Institute with some remarks with regard to internal decorations in brick, which was rather a modern introduction, especially in ecclesiastical buildings, and to his mind no colour lighted up so well by day or night, or looked so warm and cheerful, accompanied by the ordinary stained woodwork, or in connection with painted decoration generally, as good crimson red bricks. With regard to a certain quality of white bricks he would remark that the Suffolk white bricks, so much in favour in London, were not so highly regarded by himself, on account of their glaring white and chalky appearance, and they were not so well burnt as those which had somewhat of a light pink or salmon tint. These latter he had found could be bought at the kiln at 17s. per thousand, and made better brickwork than those which fetched 60s. or more per thousand in London, and if he had the choice of material he would use those salmon-tinted bricks, even if they were the same price. They must not forget that the use of brickwork had obtained very considerably in the best period of architecture in the north of Italy, but there it was combined, as he hoped one day to see it here, with the more valuable material of terra cotta, by which more artistic skill was capable of being displayed. He thought they were rather behind in the use of terra cotta, and there were those who objected to it altogether with apparently good reasons; but it had stood the test of many centuries now, and ought he imagined to be as extensively used as brickwork itself. Terra cotta had been used in many of the old buildings in Essex, (more particularly at Layer Marney), and it always produced a perfect unity of effect, arising perhaps somewhat from the fact that the material of terra cotta was manufactured much in the same way, and probably on the same spot as the other material of the walls. It must not be forgotten that marble also had been at one time used to a large extent with brickwork, and so produced very lovely combinations of colour, and he certainly thought they were very much behindhand now in the use of this as well as terra cotta, when they were going so very far in the use of bricks. He invited special attention to those brick churches in the north of Italy, at Milan, Monza, &c., &c. The colour of the brickwork was quite a study, and had generally the advantage of a deep blue sky background. Then again in Germany they found immense quantities of brickwork used in ecclesiastical architecture, though with less attempt at colour decoration, and more moulded work, which was not however part of the subject now under discussion.

Mr. C. FOWLER, JUN., Fellow, said some years ago he read a paper in this Institute upon a branch of this subject, of which he might be allowed to remind the meeting, as being somewhat supplementary to what had been stated this evening by Mr. Darbishire. There were one or two uses to which coloured bricks were applied in parts of Germany which they did not find to be the case in this country, but which he thought might be introduced with advantage. One great peculiarity was that very frequently relief was produced by stuccoing the ground of the panel, or whatever was required to be relieved, white. There might be a harsh effect at first, but the weather toned it down, and in old buildings it was anything but displeasing. It enabled them to produce effects which they could not get otherwise. In Gothic buildings the parapets, when of stone, were often pierced with tracery. This, although not actually impracticable in brick, would be both difficult and very liable to decay, unless made in large masses of terra cotta, but by using a light ground much the same effect was produced as by piercing the stone. Panels might be relieved in the same way. With reference to difference of colour, he agreed with Mr. Darbishire as to the way in which patterns should be relieved from the ground. It was rare that an actual pattern on a ground was successful; it was apt to disturb the flatness of the ground. There were some patterns, however, he had seen effective and strong, and one in particular formed, by using black bricks on a red ground, forming spiral lines round a column, or applied even to a large round tower thirty or forty feet diameter, the effect seemed peculiarly happy from the proper working out of the form. It increased the appearance of rotundity both in a column and in a large tower. He never saw an instance of light coloured brick used for panels on a dark red. They only used dark red and *quasi* black, or dull black. Generally the black bricks were glazed, though he thought the glazing was sometimes rather the result of accident than intention; but though they never used light bricks to form a pattern, certainly in the works in the north of the best period, they used bands of stone with the best effect. In the works of the thirteenth and fourteenth centuries nearly all the ornamental work was carried out in stone, only the coarser mouldings being executed in bricks, which with bands of stone introduced had a good effect in tying the building together, both structurally and architecturally. The surface patterns were of extreme simplicity, and it seemed that the men who executed the work had a certain amount of liberty given them to do as they pleased, and they did it; so that the patterns were introduced in an irregular manner, but had the desired effect of breaking the great mass of red colour without attracting the eye in any way.

The CHAIRMAN, Mr. C. C. NELSON, V.P., would ask whether Mr. Darbishire had calculated upon the effect of London atmosphere on such bricks. He thought a few months of fog would greatly alter their appearance for the worse. In his opinion the paper would probably apply more to buildings in the country than in London.

Mr. DARBISHIRE replied that he was now building some ornamental cottages in which he was using what Mr. Cubitt had recommended, viz., paviour bricks of a brownish yellow colour, and upon them in the wall spaces a dark brick from Huntingdon, and the effect had generally been commended. The Huntingdon bricks were of finer colour, uniform, and much smoother than ordinary,—quite equal to those made in Kent. The paviours were a rough brick, and much darker in colour. In London he should himself use the colours only in the most marked features of the structure, where they would attract the notice of the observer. What he had wished to draw attention to was the applicability of so much variety of colour and form to small buildings as well as large. Those structures which Mr. Hayward and Mr. Fowler had referred to were large. He had intentionally refrained from reference to ecclesiastical architecture, because the leading architects had made coloured bricks in interiors a special feature; he therefore had not referred to that application of these materials.

A vote of thanks was then passed to Mr. Darbishire for his paper, and the meeting adjourned.

12 Park St. S.W. – 20 May /65

Dr Sir –

I much want my 12 copies of the Yarmouth paper complete – as I cannot order the extra copies I want until I have sent down to Yarmouth for instructions

I am faithfully Yours

John P. Seddon

Rev Davy –

ST. NICHOLAS CHURCH, GREAT YARMOUTH.

By John P. Seddon, Hon. Sec.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, February 6th, 1865.

This remarkable and stately Church presents so many features of interest that I have thought it worthy to be brought before the notice of this Institute. In point of size and internal capacity it undeniably ranks first among the parish churches of England,* and is larger even than many of its cathedrals and minsters. The numerous and extensive changes that it has undergone are mostly chronicled in so visible a manner throughout its structure as to render it a valuable monument of all the successive styles of Christian architecture since the date of its foundation. Unfortunately the series of alterations which it thus exhibits was continued far beyond the period in which good work prevailed; and not only have we now to lament extensive transformations, due to the date of the decline of Gothic art, but also the havoc wrought by the "Pious Puritan," and a decay suffered through centuries of careless indifference and ruin, little heeded even down to a very recent date. A better era, however, dawned several years ago for this grand old pile, and it is only the means necessary to second the more earnest spirit that has been evoked that are wanted to wipe away the disgrace of its state of disfigurement and dilapidation; but the task bequeathed to this generation is no slight one, and the problems which beset the effort for its restoration are numerous and difficult; for though it is the earnest wish of all engaged in the work that its restoration should be a thoroughly faithful one, many features have disappeared without even leaving a clue to show what they were.

I shall preface my description of the Church by giving a short notice of its history.

An earlier church is known to have existed at Yarmouth, and was standing at the time of Edward the Confessor. This, however, every trace of which has disappeared, was dedicated to St. Bennet. The subsequent structure, which was dedicated to St. Nicholas, was founded by Bishop Herbert, surnamed Losinga (the glozing tongue, *i. e.* the Flatterer). It belonged to the Benedictine Monastery of Norwich, which had a cell in this place, and its establishment, together with that of the Cathedral of that city and of the Church of St. Margaret at Lynn is said to have been an obligation laid upon that Bishop of Norwich by the Pope as a penance for simony. Losinga had been previously Prior of the Monastery of Fécamp, in Normandy, and also Abbot of Ramsay, and was made Abbot of Thetford by King Rufus, through "flattery and fat payment," as it was said. He afterwards obtained the Pope's sanction to transfer the See from Thetford to Norwich. Whether or not the above stigma be true, to Losinga, at any rate, the county of Norfolk is greatly indebted for many of its noblest Ecclesiastical buildings, and this Church of St. Nicholas, at Great Yarmouth, was the latest, and not the least, undertaken by him.

But little of the actual Church built by Losinga remains now, still it will be seen that its form was preserved, and has ruled that of the entire fabric throughout all the changes and additions made to it at subsequent periods. In the early part of the thirteenth century it was all taken down, with the exception of a portion of the tower, in order that another Church might be constructed in lieu of it upon a larger scale. The central tower was alone preserved, and this necessitated the retention of the former width of the nave, chancel and transepts. Of this tower, there now exist only the core of the piers of the crux, a portion of their original base mouldings, and the three, or perhaps strictly two, lower stages immediately above the arches of the crux. The highest of these stages, with two semi-circular windows on each side and curious range of small arched recesses at the top, though Norman in appearance, has been supposed to have been built later, probably during the erection of the second Transitional Church, and the abundance of a material, thought to be tufa, found in its construction, and a curious quatre-foiled opening now visible only within the tower would seem to corroborate this opinion. And lastly there is the Early English belfry-stage, which was raised at the same time as the enlargement of the aisles of the nave. The last named is now alone visible above the general roof line, and the lowest of the Norman stages, once external, has now been enclosed by the later roofs of the Church, the openings of its windows being visible from within the building.

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* According to the tabular statement of Mr. Denison, published in the *Times* for December, 1864, Yarmouth has an internal superficial area of 23·085 ft., Coventry 22·080, Romsey 21·470, Boston 20·270, Newcastle 20·110, Hull 20·036, Southwark 18·200; while of Cathedrals, Chichester has 28·000, Ripon 25·280, Rochester 23·300, Bangor 10·650, Llandaff 10·600; while the average of London churches is but 8000 ft. superficial area, containing about 1000 persons on the floor.

Some excavations were made in the year 1847 by the Rev. John Gunn, Rector of Irstead, in the County of Norfolk, with the view of ascertaining if any foundations of the destroyed Church of Losinga existed. He fortunately met with considerable success, and discovered a portion of those of its western wall, and this extending beyond the line of the arcade, led him to the conclusion that there were probably western towers similar to those in other Norman churches He also met with a portion of a foundation wall between two of the present columns of the nave-arcade, from which he conjectured it to have been part of that of the original nave, and that there were then no arcades or aisles, and so, not admitting of enlargement, was necessarily pulled down; and at the eastern end in the chancel aisles he found indications which led him to the belief that circular chapels, similar to those at Norwich Cathedral, had terminated the building at those parts. (See dotted lines upon the plan.[*])

Such are the indications of the character and extent of the Norman Church built by Losinga, which, it is hoped, may hereafter be investigated further, when an opportunity may be afforded of following out the clue suggested by Mr. Gunn during the work of restoration, particularly that of the south aisle to the nave, which must be undertaken soon. The points which were elucidated during the late restoration of the tower, many of which were of great interest, I shall describe later in this paper, when speaking of the works that have been lately executed.

The next form which the Church attained to was that of a complete cross church, of very early Pointed or late Transitional work around this Norman tower. This was erected about the year of Our Lord 1190. It had a nave of eight bays, longer than the previous Norman one, with lean-to aisles 11 ft. 8 in. in width. The stringcourses, which received the plates of the roofs of these aisles, and the corbelled eavescourses of the nave wall above them, then external, are visible now from within the present aisles. Of the transepts, with its chapels, if there were any, and the chancel and its aisles of this Church, only the responds of what were then probably arcades of two bays eastward of the tower exist.

This Church could hardly have been, and perhaps never was, completed, before it was resolved again still further to enlarge its area, in order to accommodate the numerous side mortuary chapels or chantries which had come into fashion, and were supported by the guilds and families of the town. The same process seems to have taken place very generally in this part of the country, if one may so judge by the number of churches,[†] the proportions and character of which have been spoiled by the addition of later aisles, of far greater width than those which were originally designed for them. I say spoiled, for few of these additions were made at the same early date, or with the same care for their effect, as in this case; and even here the result cannot be considered as at all thoroughly satisfactory, although magnificent from their enormous scale.

This enlargement is said, by William of Worcester, to have been dedicated in 1251; and as the church was reconsecrated by Middleton, Bishop of Norwich, in 1286, I imagine that it was after the conclusion of these aisles. The aisles to the nave were reconstructed with a clear width of 39 ft. each —that of the nave being 23 ft. only: the style was the more fully developed Early English. The details of the southern aisle show that its erection preceded that of the northern one by some years. The jamb adjoining the tower, and the half of the narrower arch which communicated between the south aisle and the transept, were preserved, and a wide semicircular arch was turned, in order to accommodate these; and it is probable that narrow arches gave place to wider ones at subsequent dates in the three other cases of communication between the aisles and the transepts, and between the chancel and its aisles.

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[*] The whole area of the chancel having been entirely excavated for vaults, no remains of the east wall of this or the succeeding period could be found, although careful search was made.

[†] The church of S. Andrew in the adjoining parish of Gorleston; S. Margaret's, Lynn; and the church at West Walton, are examples.

The next step in this successive enlargement of the church was the extension eastwards of the chancel, and the erection of aisles on either side of it equal in width to those of the nave. The details which remain belong to the period of the Geometrical Decorated style of the early part of the fourteenth century. A stately vaulted southern porch was also erected to the south aisle of the nave.

The transepts still retained at that time the lesser height as well as the narrow width of the first Early English church, as is evidenced by the large windows, the remains of which exist in the gables of the several aisles which then overlooked the transept roof. One of these, that over the archway between the south transept and south chancel aisle, was found to be a five-light Early English window, in good preservation.* At a later period, however, the transepts were raised to the same height as that of the aisles; the details of these parts which remain belong to the Flowing Decorated style, later in the fourteenth century. The windows in the gables above named, and the lower windows of the tower, being covered by the transept roofs, were then blocked up.

The church then again assumed the character of a complete and stately cross church, the aisles and transepts of which were all of equal height, and at every angle of the building rose a lofty pinnacle, with a stone staircase therein leading to the gutters and parapets. The tower also then bore a spire covered with lead, rising to the height of 186 feet, and also four pinnacles, at the angles, as may be seen by old prints of the view of the town. The proportions of the tower and of the nave were, it is true, somewhat obscured by the greater height of these later parts. Still both externally and internally the church must have formed a very dignified and striking building. The church was rich also in furniture and accessories; a rood-loft of elaborate workmanship was erected by Roger de Haddiscoe, Prior of S. Olave's, who also constructed at the east end of the church a chapel dedicated to "our Lady of Arneburg." In the north aisle of the chancel there was, we are told, a "fair pair of organs." In and about this church nineteen separate chapels are enumerated, each with its altar, and lights burning before the statue of its patron saint. Sacred dramas and miracle plays were represented in the spacious aisles of the chancel, of the stage properties of which some curious records exist; the walls were decorated with rich hangings of arras and with paintings, of which some fragments remain, particularly an interesting portion of one in the north chancel aisle, from the subject of the murder of S. Thomas à Becket; the sedilia were richly carved and painted; faint traces of figures of angels of very exquisite character, are still visible upon those in the south chancel aisle; from the roof a ship was suspended as a type of the church. All the roofs were waggon-shaped,† and had panelled boarded ceilings with moulded ribs and carved bosses, on which armorial bearings and other designs were painted; in fact, the whole of its immense interior was most profusely and sumptuously enriched. Yet even the unusually large area within the church was insufficient to afford the desired accommodation for chapels, for which there appears to have been a considerable rivalry, and in the year A.D. 1330 it was determined by the young men of the town to erect an entirely new building 107 feet long and 47 feet wide, at the west end of the church, to be called the Bachelors' aisle. The foundation of this was laid, but the structure proceeded slowly, and was ultimately abandoned in consequence of the ravages of the plague in 1348. I am indebted for the plan of this "new work,"[*] as it was called by the townspeople, to whom it served as a quarry for many years, to Mr. Alfred W. Morant,[†] F.S.A., Architect, of Great Yarmouth, who, with the consent of the churchwardens, some time since excavated and examined the foundation of it, and placed stone posts at its several angles to mark its position.

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* It appeared that these windows had never been glazed, but had been provided with shutters.

† It is said that considerable works were executed about the year 1400. Very possibly these were to the roofs, and probably the waggon-shaped form of them and their ceilings are due to this date. Indeed this is proved to be the case as regards the ceiling of the south aisle, as the bosses at the intersections of the moulded ribs are emblazoned with coats of arms, which have been carefully restored under the direction of T. W. King, Esq., York Herald, and, by certain combinations of the arms, he fixes the date between 1399 and 1405, and has written a most interesting paper on the subject, which is printed in the second volume of the Norfolk Archæology.

There is unfortunately no evidence to show what was the intended design of this very extraordinary work, which was never attached to the main building. The irregularity and want of symmetry in the plan are very peculiar; its scale is great, the width of the entrance doorway being about 40 feet; octagonal towers were apparently proposed to flank the several angles, as turrets did all those of the church. It is, I think, not a matter to be regretted that this scheme proved a failure, as it must have marred the simplicity and unity of the general design of the building. The addition of such a feature, had it formed part of the original design, would have been desirable, and it is much to be wished that our churches generally had nobler entrances, and space for the congregation to assemble in, as is the case with the Rhenish churches.

From this period the works undertaken have mostly tended to the detriment and disfigurement of the church. One other extensive series of alterations is, however, referable to a later date in the historic age of Gothic architecture. The alterations to which I refer are in late Perpendicular, and were very disastrous to the character of the church; the whole of the windows in the side walls of the aisles to the nave, and the great windows of the transept ends, had then their exterior frames removed, and replaced by others with meagre Perpendicular tracery. An arch was pierced eastward of the early English one, adjoining the tower in the wall between the chancel and its aisles, on either side, the junction beinge ffected in a very clumsy manner, and the Decorated arcaded panelling and sedilia of the chancel being ruthlessly cut away and tampered with. The portion of the reredos which remains appears to belong to this date, and presents no proper finish at the sides where it rises above the sills of the windows.[‡] An elaborate series of aumbries in this style exist outside the eastern end of the south chancel aisle, and foundations of a sacristy building at that part are still perfect beneath the soil, and the doorway for communication with it still remains in the east wall of the south aisle. Some building also existed at one time in the corresponding position on the other side of the chancel, but not enough remains of it to give more than a clue to its purpose. There is a doorway and a squint in the north chancel wall, which communicated with it. A parvise was also erected over the south porch; this was removed in the restoration of the porch, as the slope of the original gable was clearly visible.

These works of the Perpendicular period were the last which can be referred to the age of proper ecclesiastical architecture, and, though deeply to be regretted as marring the nobler work of the earlier periods, they are interesting as a page in that stone chronicle of the several successive styles which the church presents. Unfortunately they were neither the last nor the worst of those which the ill-fated building was doomed to undergo.

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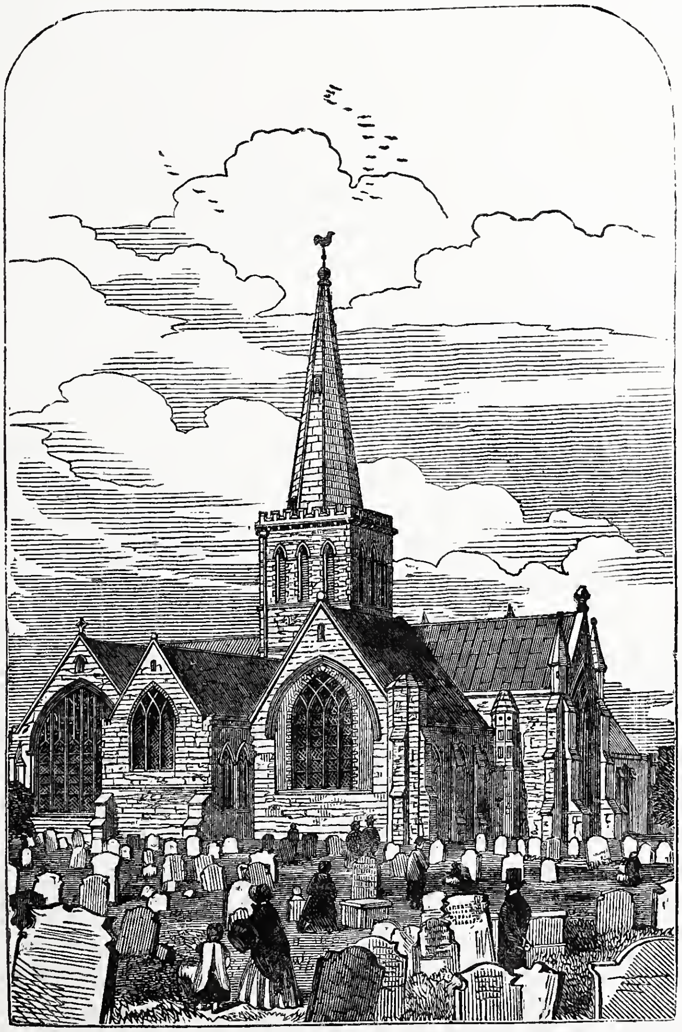
[*] William of Worcester calls it the "novum opus." It appears to have been taken down about the year 1650, and it was ordered in May, 1650, that such stones as were not useful in building should be carried to the harbour mouth for the piers, and in 1715 St. George's Chapel was partly built with stone taken from it.

[†] To Mr. Morant, and after his retirement from Yarmouth, to his successor, Mr. Bottle, our Associate, I owe thanks also for assistance in the supervision of the works of restoration.

[‡] Fragments of the reredos found embedded in the walls show it to have been a most delicate and elaborate work, executed in clunch, richly decorated with colour and gilding, upon portions a very deep rich blue tempera colour, and intense vermilion oil remained as brilliant as when first laid on.

After the Reformation, S. Nicholas was spoiled of its contents, mainly by the corporation of the town itself, and the building fell into a deplorable state of neglect.* In 1649 the chancel and its aisles were severed from the western portion of the church by the bricking up of its arches of communication; the Independents claimed a portion for their use, and the chancel was given over to them, and they broke through the canopied high-tomb of Thomas Crowmer, to make an entrance through the north wall. At the Restoration they were ejected, and the liability to maintain the chancel became a matter of dispute between the parish and the Dean and Chapter of Norwich, and in 1784 the east end fell to the ground, and the burden of re-building it being thrown upon the incumbent for the time being, he shortened the chancel by ten feet, and built a wretched wall with its miserable east window upon the old reredos (this is seen in the accompanying illustration of the Church previously to the commencement of the late restoration.)



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* In 1551 the Corporation ordered all the sepulchral brasses in the church to be torn from their stones and sent to London, there to be cast into weights for the use of the town, "by which inhuman deformidable act," says Weever, "the

The south chancel aisle has also suffered to a degree only slightly less calamitous than the chancel itself. Its angular turret has fallen, and with it a large portion of the walling. A window with poor modern perpendicular tracery has replaced the original one. Its south windows at some period had wooden debased Tudor frames inserted, and these have been at some period copied in stone. The height of its walls seems to have been reduced, and the roof consequently lowered. In 1803, the spire, which had become crooked from the effects of a fire caused by lightning in 1683, was taken down, and a new one, of mean and stunted proportions, made of fir covered with thin plates of copper, tinned, was put by Mr. Wilkins in 1807, and at the same time the four pinnacles were removed. A system of wholesale mutilation was also deliberately undertaken in the beginning of the present century, the barbarity of which is paralleled only by the treatment which the west front of Lichfield cathedral has been subjected to. The whole of the mouldings and surfaces of the exterior were hacked, so as to enable them to receive a coating of cement, with which the fabric was literally covered. Huge useless buttresses were built in brickwork, in 1811,* against the pinnacles of the west front, and the tower was swaddled up with bands of *cast iron!* and thus, at a cost which exceeds belief, the entire character and beauty of the exterior was completely destroyed. The north aisle was quite shut out from the nave, and the north transept was in a state nearly ruinous. The nave itself had a gallery for the fishermen running longitudinally almost its whole length; and in order that the fishermen should appear to be part of the congregation, two columns of the arcade had been removed in 1704, and four of the pointed arches had been converted into two elliptical ones, doubtless to the serious injury of the tower. £14,000., derived from a duty on coal, rates, and other sources, had been expended in this manner up to the year 1819 by the trustees, who then obtained power to borrow a further sum of £12,000., and to levy additional duties, in order to enable them to carry on this work of abomination; and, at one time, Mr. James Wyatt even submitted a plan for building a new church elsewhere, and suffering the old one to go to ruin.

In 1845, however, a happier era was inaugurated. The Rev. H. Mackenzie, then the incumbent, and now Sub-Dean of Lincoln, appealed for aid towards the restoration of the fabric, and raised and expended £5000. upon it. The destroyed columns and arches of the nave were replaced; the porch was restored, with a roof of the original pitch, as the late parvise above it was ruinous and not worth preservation, and the line of the former gable was clearly discernible. The pews and galleries with which the church was disfigured were then swept away, and proper oak benches substituted, and the interior of the western portion of the church repaired and brought into a state fit for public worship, and suitable accommodation was provided for 3500 persons. This work was executed under the direction of our Fellow, Mr. J. H. Hakewill.

In the latter part of the year 1862, another Committee having been formed, instructions were sent to me by them to examine and report as to the works requisite to be done in order to effect a complete restoration of the building. I accordingly surveyed it, and made an estimate of the works necessary for such a purpose, amounting to about £23,000. Towards this sum the Dean and Chapter of Norwich voted £1000.; and with this as a commencement, subscriptions were obtained which enabled the committee to give orders for the restoration of the tower and chancel, and other works in all amounting to an expenditure of about £6000. But at present they are unable to undertake any portion of the work required to the western portion of the church, for which there is a pressing necessity, as the south wall is in imminent danger through the decay of the roofs. It was, however, important to

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honourable memory of many virtuous and noble persons deceased is extinguished." This wanton spoliation in the church itself was followed up by the churchwardens, who in 1560 actually took the grave-stones out of the churchyard, and sent them to Newcastle to be converted into grindstones.—*Palmer's Manship, vol. ii., p.* 129

* Wilkins added the ties in 1806; and in 1834 two of them broke, and created much alarm, and repairs were then executed. The gable end of the south transept was rebuilt in 1822, and its window renewed.

commence with the central portion, and to work thence steadily upon a definite system; and it is confidently believed that the undertaking will not be suffered now to rest until the whole structure has been rendered thoroughly and substantially sound, and restored to the full integrity of its unique design.

Such is a brief historical notice of this church, and the several architectural and other changes which it has undergone: it now remains to describe the building itself somewhat more minutely.

The Norman portion of the tower will first claim our attention, and be found to deserve it. It, like the rest of the church, is constructed* of flintwork, with dressings of freestone. It was but a short time since in a most perilous condition, rent with fissures, of which one was so large that a person could pass from one side to the other through the wall. This had been, however, for some years partially filled up with flintwork in cement, yet the appearance was still perfectly awful, and it was surrounded by numerous bands of iron, with transverse bars through the walls; but these being only of cast-iron, were perfectly useless, and many of them were broken at the angles, and the ruthless way in which the walls had been pierced to pass these bars through them had further seriously weakened them. Still the mortar in the interior was tolerably firm, and the decay which met the eye was mostly on the surface, but had extended so deeply as almost to obliterate its architectural details. The quoins originally short, and bonding but slightly into the walls, had mostly disappeared, and a few stones only remained to mark where the stringcourses had existed. All round the top of the upper Norman stage of the tower is a curious series of small arched recesses, eleven on each side, which were constructed of the before-mentioned tufa-like material, which had become much decayed—they were about one foot in depth, and had a rebate on the outer edge. Below these were indications of two semicircular windows on either side. Some of thesenot being now needed, have from a regard to stability been only restored as blank panels, ornamented as similar ones are at Norwich cathedral. The stage below this is very interesting, and a careful examination of the portions which had been preserved beneath the abutting roofs of the transepts, enabled its design to be made out pretty clearly. It consists of an arcade of eight semi-circular headed square edged arches on either side, with columns, with cushioned caps and molded bases—these arches are slightly recessed, and probably originally the two centre ones, which are combined under one semi-circular relieving arch, ornamented with notches, were pierced as a two-light window, divided by a single shaft. Such a shaft was found embedded in the wall, but unfortunately too late to be useful in the restoration, and the critical condition of the tower enforced a sparing re-opening of such ancient lights. Flat pilasters, flush with the work between, divide the upper part of this stage into rectangular panels on either side of the central arch, the space below which had a square ornamental pattern, formed in blocks of the same tufa-like material. Below this stage, and within the present abutting roofs, are two Norman windows on each side of the tower.

As a first precaution, and to assist examination, the plaster was stripped from the walls on the side of the tower, towards the chancel, beneath its roof, and on the eastern side, above the large arches leading from the chancel aisles to the transepts, and they were found to be seriously fractured in numerous directions. The piers of the chancel arcades were also in a very shaky condition, and that on the south side quite shattered, while the whole area of the chancel, near the tower, was honeycombed with vaults. The vaults were filled up solid, and a 2 feet thick layer of concrete was first put over the western part of the chancel floor and around the damaged piers. The southern pier was then re-built in cement, one half at a time, and the northern one afterwards made good. The walls were then carefully repaired with strong bond stones across all the fissures, and then the part above the roof was entirely re-cased, the ancient features being restored, but new solid gable walls, with stone copings as weatherings, were built as additional security to receive the roofs of the chancel and transepts, and the angle quoins were constructed longer and more solidly than the original. The old iron ties and bars were removed, the holes filled up, and new wrought iron ties, pinned together at the angles, were let into the new stone strings, which were tailed 2 feet into the wall; other ties were also inserted at intermediate heights, and the whole casing was built in cement, and the walls grouted with liquid cement. The flint work was faced with split flints instead of boulders or beach pebbles, as the former work, with necessarily wider joints, had proved so liable to decay. The ashlar facing of almost the whole of the upper Early English stage had also to be taken down and re-built, stone by stone, and it may be noted as a curious fact, that only the south and east sides, which were more seen from the town, were originally entirely faced with ashlar, the others, between the dressings, having only stone rubble, which had terribly decayed; these were therefore faced with freestone in random coursed work, to preserve as much as possible, consistent with security, the same character. The cornice and parapet, which were quite modern (1807) and poor, and built of Portland stone, were taken down and replaced with new, with turrets at the angles, for the design of which I must be held responsible; it should, however, be borne in mind that this has been calculated to harmonize with the proposed spire, with the lucarnes shewn in the design, and not with the present truncated one.

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* The tower has doubtless been in a bad state for a long period. In the 20th year of the reign of Elizabeth, the churchwardens were ordered to consult experienced workmen about repairing it, and in 1625 a report was spread that it was in danger, but a committee then viewed it and reported it to be strong and not in danger.

Of the date of the Transition into Early English we have the nave with its eight bays on either side, with well arranged and varied columns, octagonal, circular and shafted on plan in rotation; western doorway and triplet window over, of great simplicity but good proportion. There is a considerable height of wall above the arcade, which appears never to have had any clerestory or any other architectural features. The narrowness of the nave produces a somewhat curious effect, its columns appearing to form an avenue in the middle of the vast area. I have often speculated as to what would be the effect of a building with aisles no less than these, but attached to a nave of proportional dimensions, say 60 ft. wide. The difficulty would be, doubtless, the tower; but the other day I noticed that the central tower of the church of Llanbadarn Fawr, close to Aberystwith, measured 40 ft. externally, and it looked but suitable to a modest parish church, so that I think this would be a difficulty easily surmounted. Is such a conception altogether Utopian in these days? Certain it is we need large churches, but the spirit which dictated the colossal idea suggested by the foundation of the "new work" is what is wanting.

Of the complete Early English we have the two aisles of the nave differing only in slight delicacies of detail, each has a magnificent western triplet window. That of the south aisle in many points curiously resembles the external arrangement of that of the west front of Llandaff Cathedral, having the same narrow arched panels between the window openings, while that of the north aisle is very similar to the internal arrangement of the same window. The internal dressings of the side windows of both aisles are very fine, being both delicate and bold, and cause one deeply to regret the substitution of the Perpendicular for the cotemporary external window frames and tracery. The south aisle is in an imminently tottering condition, and must be taken down to the window sills and re-built, in which case I consider it will be sufficient to allow the north aisle to record this piece of architectural history, and that the opportunity should be taken of restoring this side to the integrity of its original design. The south porch has been a sumptuous work, with detached Purbeck shafts supporting curiously designed traceries; it is vaulted, and both the doorway it leads to and the opposite one to the north aisle, are exceedingly telling. The great semi-circular arch leading to the south transept, 30 ft. wide, is vigorously and well molded. Having been erected before the transept was raised, it is probable that the necessity to accommodate the lower height of that dictated the form. The still wider arch, leading from the same transept to the south chancel aisle, also Early English, is a depressed pointed form (the centres being much below the springing line), and far inferior in effect and weaker in construction. I should note that its floriated capitals are new, the old capitals having been destroyed at the time when walls were built across the church, in the line of this archway. Purbeck, Barnack and Caen stone are freely used in the construction of these aisles.

The decorated work of the eastern part of the church is quite as vast in its conception, but lacks the delicacy which gives tone to the earlier work, and it has been sadly tampered with. The entire destruction of the portion eastward of the reredos, and all but the internal framework of the great windows of the aisles, left scope for the imagination, and I have had to draw upon mine in scheming their restoration. The side windows of the north aisle, and of the chancel itself, are said to have been faithfully copied in recent times from the old ones, but are somewhat coarse. The side windows of the south aisle are ingenious copies in stone of previous wooden ones, of debased Gothic.

Of the two transepts of the late decorated work, we have again only the internal framework of their magnificently proportioned end windows, and there is an indifferent two-light window in the western wall of each, but in the north transept is an exquisite doorway, and some splendid fragments of recessed canopied tombs in its eastern wall.

The Perpendicular work does not deserve more description than that I have already given of it, and to my mind is a page of the architectural history which might well have been spared; yet being there, of course possesses historical interest, and therefore to be respected.

The restoration at present has comprised only, besides the works to the tower already mentioned, the throwing down the partition which divided the church into two parts, and the complete restoration of the chancel proper, amounting necessarily almost to its rebuilding. The chancel has been restored with the same materials as originally used, viz. oak for the roof, covered with lead, to this has been added an enriched cast-lead ridge crest. The stone employed was Ancaster for the dressings, the walls being of flint. The throwing open the entire area was a measure the practical desirability of which was disputed by many, but I think since it has been effected that no one now holds an adverse opinion with regard to it. But I own myself to have been agreeably surprized to find that my anticipations of the result have been far exceeded; for on the occasion of the opening, when the Bishop of Oxford preached, he was, I am assured, heard throughout the building distinctly, and from the pulpit, which was placed westward of the north-west pier of the tower, the entire congregation was well commanded, while the effect of nearly 6000 persons assembled upon the floor, was impressive in a very high degree, and the vastness of the perspective, and the grandeur produced by the wide span of the arches, was exceedingly imposing.

When it is considered that the largest of the London churches does not exceed about 8000 feet superficial area, and that 1000 persons is about the utmost accommodated by any of them, the proportions of this splendid pile, containing 23,085 superficial feet in area, and at least 4000 people on the floor, will be appreciated. So that if the proposals as to Cathedral extension, which have been made by Mr. Beresford Hope in his work on the English Cathedral of the Nineteenth Century, should be ever carried into effect—if the work of the church in large and populous towns should be found to gain by a systematic concentration of the efforts of its clergy, rather than by the multiplication of small churches and the isolated and disconnected exertions of individuals, as was discussed at the recent Church Congress held at Bristol, and previously by the Ecclesiological Society—if the Bishop of Oxford be correct, as I trust he is, in his belief that "the day of building a number of cheap, poor and miserable churches has passed away"—then I think that no better typal example of the class of structures which would be needed can be found than this Church of St. Nicholas, Great Yarmouth.

The President, T. L. Donaldson, said, he was sure Mr. Seddon would have great pleasure in giving any further information upon the interesting church that had been brought before the meeting in the paper, the illustrations of which, he remarked, were executed with a size and boldness of character worthy of imitation in descriptive papers like the present one.

Mr. Ferrey, Fellow, observed that he had been struck with the remark respecting the different facings of the tower, and the south and east sides being more highly finished than the others. He would like to know the reason for this, and whether it was an expedient to resist the effects of the weather by being constructed of better material.

Mr. Seddon replied he considered these had been simply treated as the show-faces of the tower. In reference to the rood screen, Mr. Seddon stated it had been situated on the east side of the centre tower. In answer to the enquiry if the roofs were original—that he did not believe the present roofs were, but most probably belonged to the alterations of the perpendicular period.

In the course of further conversation Mr. Kerr remarked, with reference to the cast-iron bonds employed for securing the tower during its dilapidation, that cast-iron was as suitable for that purpose as wrought-iron, provided it were protected from blows. On the subject of the composition of tufa[*] various opinions were expressed, some members attributing to it a calcareous, and others a volcanic origin. —Mr. Street mentioned that in a Romanesque church in Herefordshire, on which he was engaged, all the windows were built of tufa, which was obtained in the neighbourhood, a few miles distant.

A vote of thanks were passed to Mr. Seddon for his paper, and the meeting adjourned.

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[*] Rees' Cyclopædia defines it, "a stone formed by depositions from springs or rivulets containing much earthy matter in solution or mechanically suspended. Tufa is also formed by the concretion of loose volcanic dust or cinders cemented by water, and also by the consolidation of mud thrown out of volcanoes. The disintegration and subsequent consolidation of basaltic rocks forms a third kind of tufa, which the German geologists call trap-tuff." Hence it appears that there are Three kinds of tufa. Calcareous, formed in large quantities in limestone districts, hardens by exposure to the air, and is frequently used in architecture. St. Peter's, Rome, and some of the grandest works of ancient and modern architecture in Rome, are formed of a species of calcareous tufa, called travertino; also the temples at Pæstum. It assumes a reddish tint by exposure to the air. Springs issuing from the Cotswold Hills, in Gloucestershire, deposit calcareous tufa, which has been used for some of the oldest buildings, and proves its hardness and durability. In Derbyshire, and in all the calcareous districts of England, beds of tufa are formed by similar deposition. It is, no doubt, this *calcareous* tufa that has been used for window dressings in some Romanesque churches in Herefordshire, which seems to have nothing to do with *volcanic action.* Volcanic tufa and Basaltic tufa (the latter seen in Arthur's seat, "Edinburgh") are quite other products. It would be desirable a trial should be made how far such tufa, or the travertine of which St. Peter's is built, would stand our London atmosphere—pozzolano being used in making the mortar. The rich tone of the old Pæstum temples is superior to that of any coloured brickwork. It is nature's handywork, aided only by time.

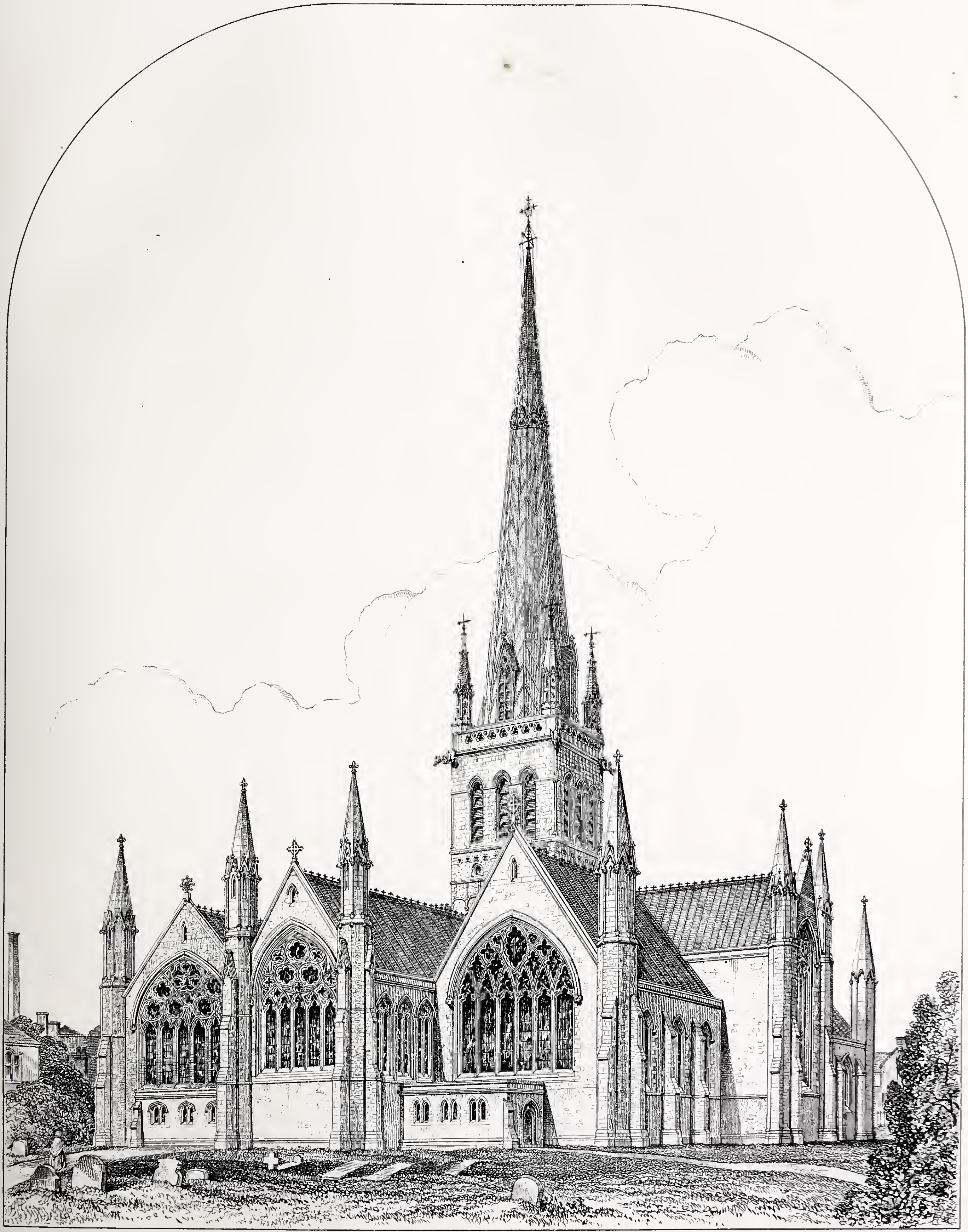
The following letter explains to what class of tufa that used in St. Nicholas Church in all probability belongs:—

"Royal School of Mines, Jermyn Street,
"February 22nd, 1865.

"Dear Sirs,—

I have had much pleasure in submitting the specimens from the church of Great Yarmouth to the Director and several of the officers of this Institution, and they are all of opinion that the material is not manufactured. They believe it to be, probably, trachytic tuffs or ashes from the Lower Eifel, in the neighbourhood of Brohl or Andernach, and there known under the name of "Trass of the Rhine." It is at the present time brought down that river in boats, and, when powdered, is used for the purpose of making hydraulic cement.—I am, gentlemen, yours very faithfully,

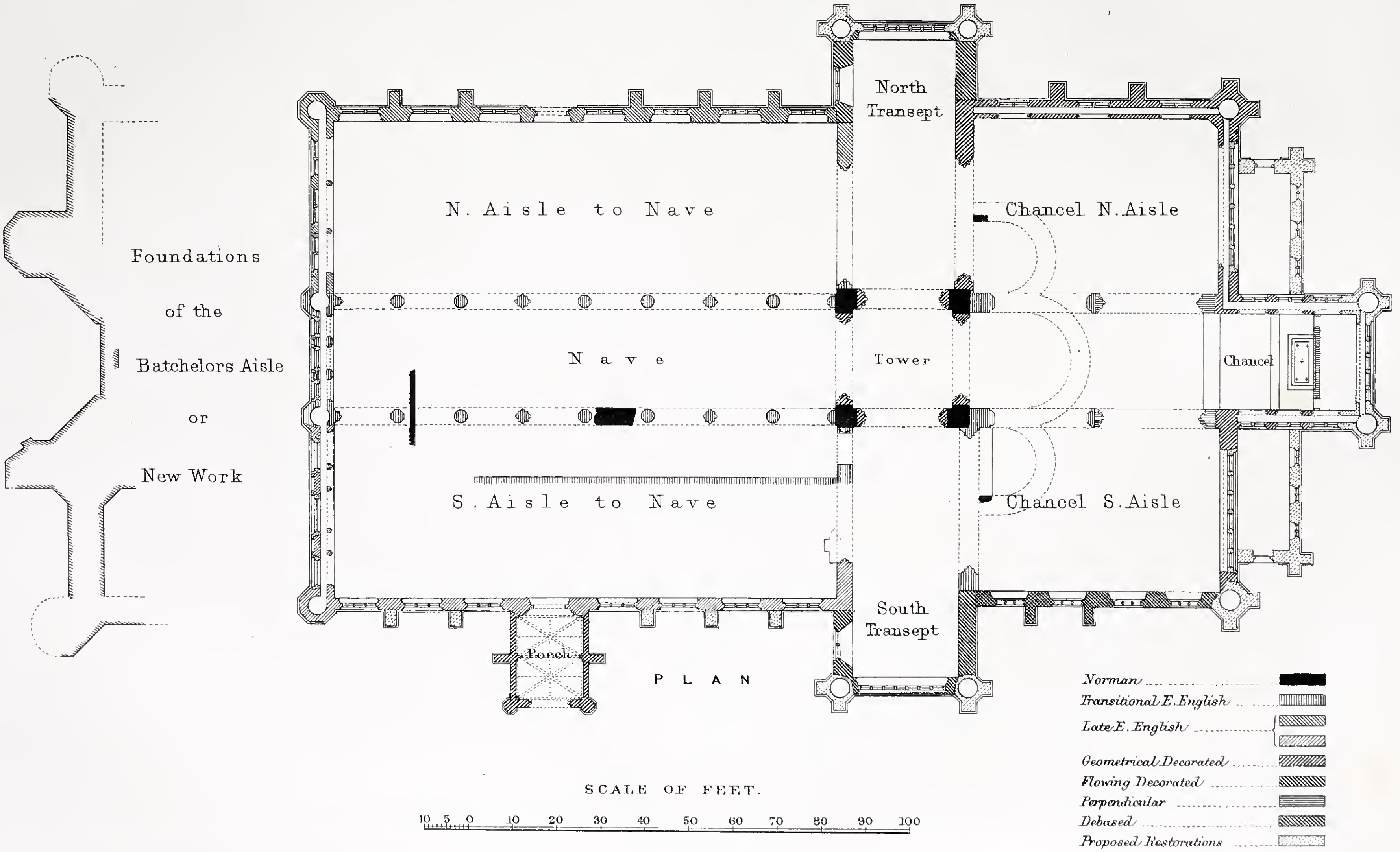
"To the Hon. Secs. Royal Institute of British Architects." "Trenham Reeks.



N. E. View of the Church of S. Nicholas', Great Yarmouth

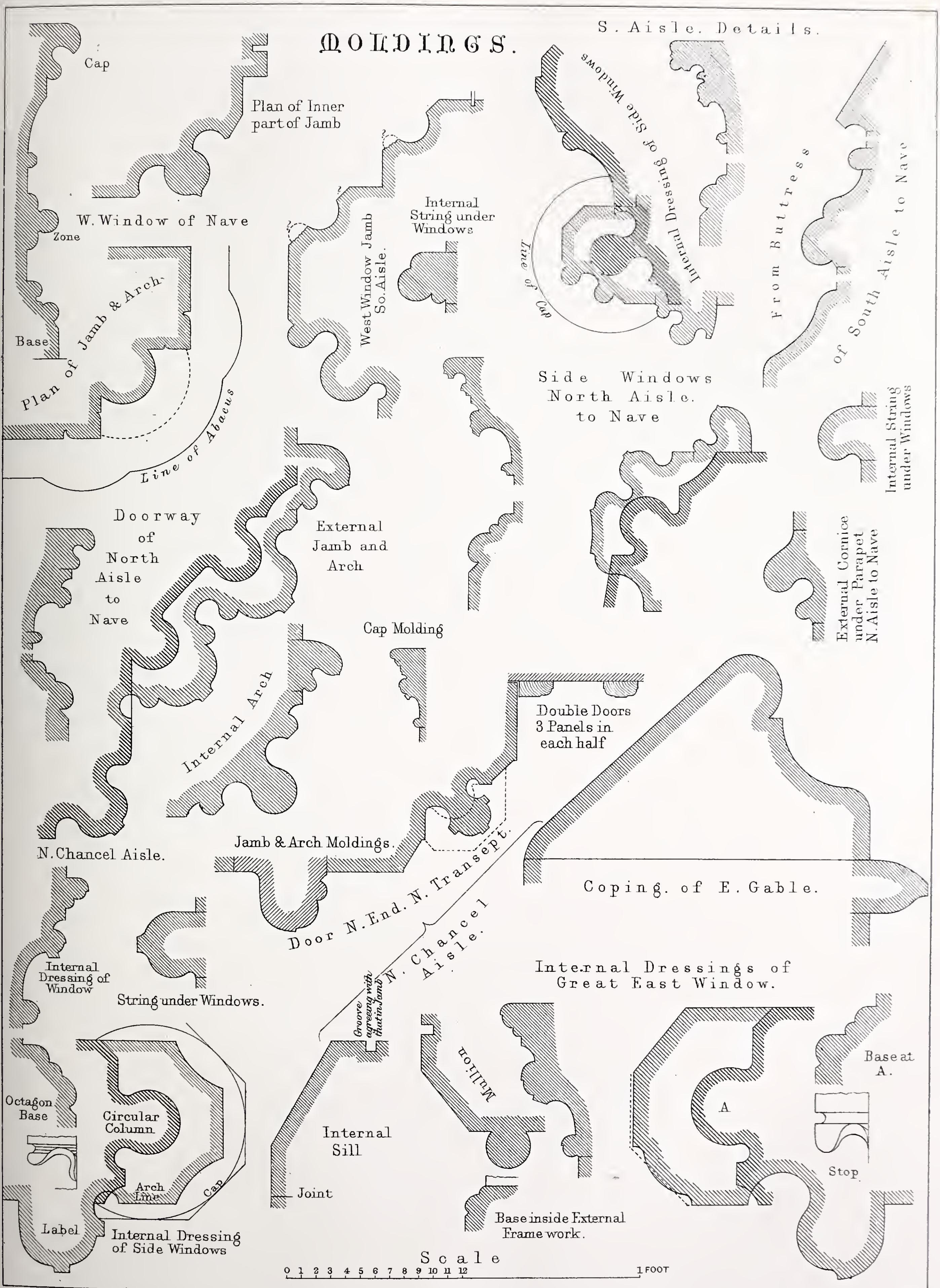
AS RESTORED BY J. P. SEDDON

S. NICHOLAS CHURCH, GREAT YARMOUTH.



JOHN P. SEDDON, ARCHT.

J.R.Jobbins


MOLDINGS.
S. Aisle. Details.
Cap
Plan of Inner part of Jamb
W. Window of Nave
Zone
Base
Plan of Jamb & Arch
Line of Abacus
West Window Jamb So. Aisle.
Internal String under Windows
Internal Dressing of Side Windows
Line of Cap
From Buttress of South Aisle to Nave
Side Windows North Aisle. to Nave
Internal String under Windows
External Cornice under Parapet N. Aisle to Nave
Doorway of North Aisle to Nave
External Jamb and Arch
Cap Molding
Internal Arch
Double Doors 3 Panels in each half
N. Chancel Aisle.
Jamb & Arch Moldings.
Door N. End. N. Transept.
Coping. of E. Gable.
N. Chancel Aisle.
Internal Dressing of Window
String under Windows.
Internal Dressings of Great East Window.
Groove agreeing with that in Jamb
Octagon Base
Circular Column
Arch Line
Cap
Label
Internal Dressing of Side Windows
Internal Sill
Joint
Mullion
A
Base at A.
Stop
Base inside External Frame work.
Scale
0 1 2 3 4 5 6 7 8 9 10 11 12
1 FOOT

J.R.Jobbins.

Church of S. Nicholas, Great Yarmouth.

ON ENGLISH WOODWORK IN THE THIRTEENTH AND FOURTEENTH CENTURIES.

By George Edmund Street, Vice-President.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, Feb. 20th, 1865.

I propose to-night to ask your attention whilst I attempt to give some slight account of the work of English Carpenters before the end of the fourteenth century; and this not because I suppose myself to be in possession of any exclusive information on the subject, but because unfortunately it has always been by far too much the fashion to illustrate and describe the woodwork of the fifteenth and sixteenth centuries only, just as though none remained of earlier date. So much indeed has this been the case that I may venture to say that there are many of our modern buildings, in which the detail of the stonework shows a fair acquaintance with early pointed stonework, but in which the detail of the woodwork appears to show an almost absolute ignorance of early woodwork. Yet, as I shall have to show, the remains of woodwork of the thirteenth and fourteenth centuries are still so numerous and so varied, as to afford ample subject for our study and ample authority for our guidance.

The most valuable work on the roofs of the Middle Ages which we possess is probably that of Messrs. Brandon; but when I say, that with the exception of the roof of S. Martin's, Leicester, the aisle roof of Haslingfield, and two or three trussed rafter roofs, there are none selected for illustration, of the date to which I limit myself to-night, it will be seen that the field is open to me. For the study of the later roofs, Mr. Brandon's book and the publications of the elder Pugin, are good and sufficient guides, though not more than guides, for the final study of the architect ought always to be the roofs themselves. The valuable work of our librarian Mr. Dollman, on the "Domestic Architecture of the Middle Ages," contains some good examples of early woodwork drawn with his usual care; and Brandon's "Analysis of Gothic Architecture" contains, if I remember right, several details of the same kind. But I have preferred, in the notes which I offer to give to-night, to confine myself entirely to my own notes of ancient examples. Such a subject as mine would be one of special interest to us as Englishmen, even if our consideration were not limited to the examination of English examples and systems; for if there is one feature which, above others, distinguishes the earlier architects of this country from those of others, it is that they were skilled beyond all others in the science and practice of carpentry. Whether it was that they were surrounded on all sides by the ocean, and that from the first, therefore, naval architecture must have had its influence to some extent upon them; or whether it was because they had the good fortune to possess ready to their hands, and in greatest abundance, some of the best of European timber, certain it is, that the buildings they erected are more remarkable for the beauty and variety of their wooden roofs than are those of any other race of architects in the world. And where as in France, Spain, and Germany, few architects ever thought of anything but a stone roof as the proper finish to the interior of their buildings of any architectural pretensions, our old English architects had no such feeling, and erected in all parts of the country these monuments of their skill, often magnificent in their effect, gradually becoming scientific in their construction as time wore on and experience taught them true principles, and still enduring in such numbers as to astonish us when we think of the perishable nature of their materials, and the neglect with which they have so often been treated by their guardians during the last three hundred years. In short, just as we must give the palm to other countries when we examine the history of groined roofs executed in stone, so is it certain that we have had no worthy competitors in the science of building and ornamenting timber roofs.

It is not impossible that our ancestors persevered in their peculiarity when once it was established, very much because it *was* a peculiarity. Our insular pride is of no new birth, and was as strong and decided five hundred years ago as it is now. Our architects persisted at that time in the adoption of the square east end for their churches, when the apse was almost universally introduced by the architects of the whole of the rest of Europe; and with a similar feeling they may have resolved on the use of open timber roofs in preference to the more usual stone roofs of their continental contemporaries; besides which, the difficulty experienced in England in obtaining good building stone in some districts, may have conduced to the same result. But, however this was, their practice ministered no doubt in a far greater degree to the love of variety, for which they were conspicuous, than the other practice would have done. There is no greater limitation to an architect who loves variety of outline, plan, and effect, than the obligation always to cover his building with a stone groined roof; for the varieties of which it is susceptible are but few, the elements of its construction always the same, and the resulting forms and positions of buttresses and points of support also very similar. One of the consequences, therefore, of the general absence of stone vaults in our old buildings is that they are more full of irregularities in their plans, of variety in their designs, and of invention in all their parts, than those of any other nation; and we may be well satisfied to put up with an occasional loss of grandeur, if it thus involves so great a gain of loveliness and interest.

Of woodwork executed before the end of the twelfth century we have either very few or no examples in this country. The probability is that it did not differ very much in its character in the tenth, eleventh, and twelfth centuries; and, as far as we can ascertain from the representations of buildings in illuminated manuscripts, this seems to be the case. The drawings of woodwork in some of these works, as, *e.g.*, the Benedictional of St. Ethelwold (tenth century), prove that carving and moulding, if not turning of wood, were commonly practised; but as to the architectural character of the work so executed it is impossible to judge with any exactitude. In these illuminations we constantly see articles of furniture (such as chairs) represented with great minuteness, and the exteriors of buildings with turrets, and roofs of moderate pitch; but of their structure or detail, especially in the interior, it is difficult to speak at all positively. It is probable, however, that the roofs which appear to have been used in our Norman buildings were, to some extent, the same as, or reproductions of, those which the Saxons used. They consisted of the simplest elements, either of rafters placed against each other, and resting upon plates connected with rude tie beams, or, where the scale of the building required it, of rafters trussed and framed together in the way which we see to the present day in such examples as the roof of the nave of Ely Cathedral. There can be little doubt, too, that our Saxon churches were, as a general rule, of small dimensions, and that some of them were constructed entirely of timber, and were very rude and simple in their architectural character. It is not unlikely that whatever architectural enrichment was applied to the Saxon roofs and woodwork generally, was derived in some degree, if not directly, from Rome; for the connection of the clergy with the Roman Church would render this in a high degree likely, and, as Professor Willis has shown in his history of Canterbury Cathedral, the Saxon Cathedral there was in some sort a copy of the Old Basilica of St. Peter, whilst the influence exerted by the monks of Canterbury would act largely upon their brethren in other parts of the country. The account of the burning of Canterbury Cathedral in A.D. 1174, given by Gervase, may perhaps be quoted with advantage, as bearing incidental evidence to the construction of one of our most important churches. Three cottages having caught fire, "the sparks were driven by the wind between the joints of the lead, and set fire to the rotten rafters;" from these the fire was "communicated to the larger beams and their braces, no one yet perceiving and helping. *For the well-painted ceiling below*, and the sheet lead covering above, concealed the fire that had arisen between, and now that the fire had loosened the beams *from the pegs that bound them together*, the half-burnt timbers fell into the choir below upon the seats of the monks; the seats, consisting of a great mass of woodwork, caught fire; and thus the mischief grew worse. And it was marvellous, though sad, to behold how that glorious choir itself fed and assisted the fire that was destroying it."*

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* Willis's Canterbury Cathedral, p. 32.

Here we have a description of a church with a steep roof and a boarded ceiling under it; and, with the example of the nave roof of Peterborough Cathedral still before us, we need have no difficulty in understanding the nature of its design. The painted decorations of the ceiling at Peterborough, strangely as they have been altered in the last century, still retain enough of their original design to leave no room for doubt that the whole foundation of the work is Romanesque, and about coeval with the fabric of the cathedral; and probably the grand open timber roof of Ely Cathedral is not much later in date. Woodwork with any marks of Norman sculpture or carving on it is very rare, though there is a tie-beam in the roof of old Shoreham Church, which has the billet moulding carved on it. As an example of woodwork of the period of transition from Norman to First-pointed, the screen at Compton, in Surrey, is one of the most characteristic remains. The detail of the carving and of the moulding are alike good. This screen remains in its old position, forming the front rail to the floor of an upper chapel contrived over the groined roof of the chancel, and appears to be coeval with the church.

It is with the introduction of Pointed architecture that the main interest of our subject commences; and from the beginning of the thirteenth down to the end of the fourteenth century, the multitude of examples of every kind of workmanship in wood is the only real difficulty with which I have to contend in such an essay as this.

The subject will divide itself naturally under several heads: Firstly, the use of wood in construction—in roofs, spires, and turrets, houses and barns, ceilings, floors and groining, porches, lych-gates, doors, and windows, bell wheels and carriages, palings, scaffolding, and various other works; and, Secondly, the use of wood for furniture, more particularly for that used for ecclesiastical purposes—as, *e. g.* screens, seats, and stalls, pulpits, font covers, lecterns, sedilia, chests and presses, and the like—besides which there are other uses of wood which I need only just mention, as, *e.g.* the use of wood, when not intended to be seen, as for receiving plates of metal, for book-covers, for pictures, for utensils of various kinds, for all kinds of domestic furniture, as well as its use for covering roofs, for naval and other purposes, which it will not be possible to say anything about to-night.

Beginning then with the use of wood for roofing. It is well to remark, first of all, that the varieties in construction of old roofs depended to some extent on the fashion which had been set, either by the abundance of material, or by some one bishop or architect in particular dioceses or districts. It is easy to mark out certain general divisions on the map of England, within the limits of which a remarkable similarity is apparent in the wood-work as well as in the stone-work, as *e. g.* The hammerbeam roofs of the Eastern Counties, the trussed rafter roofs of Kent and Sussex; the waggon-shaped roofs of the Western Counties—the work one might suppose, from internal evidence, of people living on the sea-board. But, beside this, we find that our old architects were constantly varying their designs, with the object of improving the construction of their roofs, and very often with a view to dispensing with the horizontal tie-beam, which in many cases was evidently felt to be an eyesore.

The earliest roofs of which we have examples have generally tie-beams, connecting the plates, and all the rafters framed together so as to show from below five canted sides (Old Shoreham Church and S. Mary's Hospital, Chichester), or else with the braces below the collars curved so as to make the internal roof circular or pointed-arched, instead of polygonal in its section. The object of all this trussing or bracing—whether rectilinear or curvilinear—was evidently, firstly, to tie each pair of rafters together, and secondly, to stiffen them sufficiently at various points in their length to enable them to support the weight of their covering, and to resist the force of the wind. The simplest form of trussed rafter roof has rafters, collar rafters, and ashlar pieces between the wall plates and the rafters: the next form has diagonal braces passing from the lower part of the rafter on one side across the collar to the upper part of the opposite rafter; and the most finished form has, in lieu of these straight braces below the collar, curved braces, which giving a series of arches, one beyond the other, produce always a very charming effect. These roofs are so important and so numerous that you must allow me to describe one or two of them somewhat at length. First of all let us look at the roof of Salisbury Cathedral—a work never intended to be seen, but yet constructed so honestly and well, that were it necessary to show it, there is nothing in its appearance of which the constructor need be ashamed. This roof is of very steep pitch, and has all its rafters framed together, and has tie-beams only 6 ft. 6 in. apart. There are outer and inner wall plates, and these are connected in a very secure way to the tie-beam by means of diagonal ties or dragon-pieces crossing them and fastened to the tie-beam. In the fourteenth century I think this roof gave way to some extent, and then two chamfered posts—queen posts I suppose I ought to call them—were added between the collars and the ties, and purlines supported by trusses from the plates were also added. With these additions the roof seems fitted to last for ages. The rafters here are 6½ in. and as much as 1 ft. 6 in. to 1 ft. 8 in. apart. The number of ties in this roof may, no doubt, be accounted for by the necessity of tying the walls together above the groining. There are no flying buttresses above the triforium roofs, and though the groining is, I believe, constructed with light calcareous tufa, its weight and thrust must still be felt.

The somewhat similar roofs at Wells and Exeter may be dismissed in a few words. At Wells, the roof over the transept is rather light, having no tie-beams, and curved braces to only every third pair of rafters; but the roof over the nave is like that of Salisbury, a forest of timber and of very striking effect. I exhibit a large drawing which shows its construction, and it will be observed that here, just as at Salisbury, the tie-beams are placed at very short intervals, the flying buttresses also being omitted. Usually these trussed rafter roofs are simpler in design than the examples just described, and consist only of a pair of rafters tied by a collar-rafter, with diagonal braces between the collar and the rafter, and upright ashlar pieces between the latter and the plate. This is, perhaps, the commonest form of old English roof, and a few words are here necessary as to the way in which they have endured the test of age. First of all, however, let me say that, in the presence of carpenters' work six hundred years old, I speak with reverence, and with the certainty that, by the time another similar period has elapsed, all or nearly all our own works, upon which we flatter ourselves that we show so much skill, will entirely have disappeared and decayed! Now, very many of these old roofs still stand but little the worse for age or wear. They have suffered much by neglect, and the admission of damp and wet to the feet of the rafters and the plates; this has often ended in their destruction. They have also suffered, when their span is great, from the weakness of their construction in one part. The timbers were morticed and tenoned, and pinned with oak pins; and everyone who has examined many of them will be aware that in very many cases the pins have been broken short off, whilst in others the rafters have broken between the collar and the plate, and in both cases the plates have been pushed outwards. If this has happened in roofs constructed with nothing but the best oak timber, and with very heavy scantlings, I leave you to draw your own conclusions as to what is likely to happen to the pretended copies of these roofs erected at the present day on all sides, with rafters of weak fir, and scantlings 2½ by 4, instead of 6 by 4 or 6 by 6, as we find them in the old work. My belief is firm that few of these copies will last fifty years, and certainly none will last six hundred. The somewhat similar roofs in which the rafters are all framed together, but in which curved braces are framed to the under side of each pair, are so similar in principle that I need do no more than refer to them in passing. Many of these roofs are extremely ornamental in their effect, and some of them have the curved braces moulded at intervals, so as to take away from their otherwise somewhat monotonous effect.

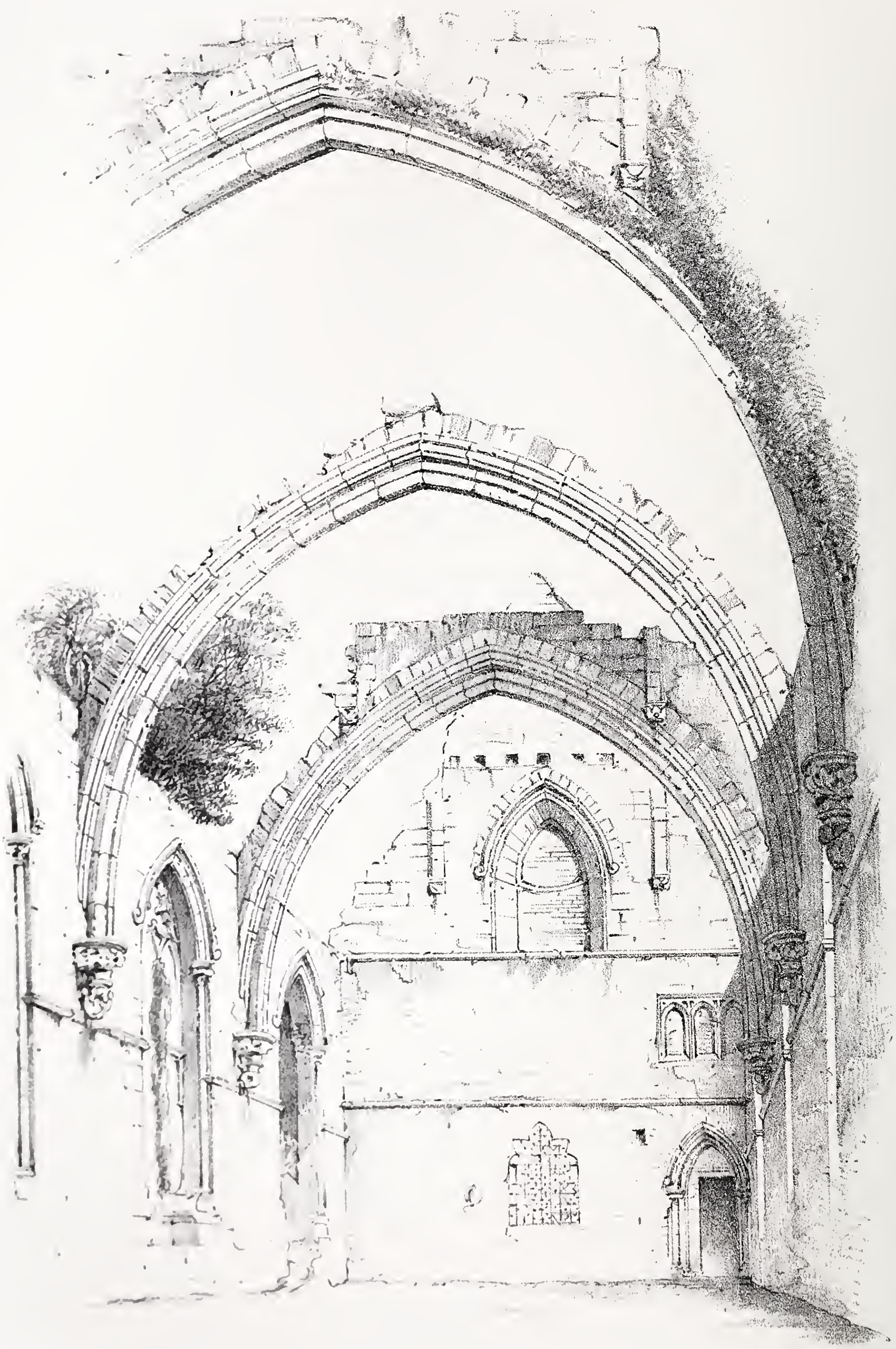
Examples of each of these forms of roof are frequently met with in which the construction has been enormously strengthened by the addition of a tie-beam; and where the outside covering has been fairly attended to, this form of roof still stands as well as when first erected, and may almost be said to be capable of lasting for ever. Some years ago a serious mistake was made by the enthusiastic and much-to-be-honoured lay revivers of our national architecture, who pronounced decidedly against tie-beams as though they were 'a mark of the beast,' and unsuited to the spirit of English architecture. They could not have made a greater mistake. Some of our finest old roofs have them, and it may be safely asserted that unless we have ample means for the construction of costly roofs of the strongest materials, we shall *always* be well advised to introduce a direct tie. The forms of tie-beam roofs commenced with the simple insertion of a beam from plate to plate. It was at once found that this was weak and liable to sag in the centre, and it was strengthened by the addition of a king-post. This form of roof was possibly derived from the French, and at any rate it is one from which their architects departed but seldom for three hundred years. It is very effective when, as is usually the case, the king-post is treated as a shaft with moulded capital, band and base, and the tie-beam is moulded on its under side, as in the example of Old Shoreham, where the dogtooth is introduced in the centre of a bold arrangement of mouldings.

It was soon found, however, that roofs of this kind required further support. The tie-beams held the plates together, but there was no provision for any longitudinal tie, each pair of rafters being separate from the next. This defect was at once remedied by the insertion of a longitudinal timber above the king-post, supported by curved braces, tenoned and pinned into both it and the king-post. The king-post was still generally treated as a shaft (either circular, oetagonal, or square) with moulded capital and base, and curved braces were also generally introduced, connecting it with the canted braces between the collars and the rafters, or with the collars. In all these examples there is no principal rafter or truss properly so called. The king-post was inserted in the first place to preserve the tie-beam from sagging, and the latter was adopted only with a view to tieing the plates together, and affording a firm footing for the feet of the common rafters. Each pair of common rafters, framed and strutted, was complete in itself, and had no dependence upon any other portion of the roof, save the plate, until the introduction of the longitudinal timber under the collar rafters, of which mention has just been made. This addition to the roof, whilst it tended to bind the whole of the timbers together, and was undoubtedly an improved construction, was, however, found to involve another difficulty; for, as it threw a great part of the weight of the roof on the tie-beam, this had a tendency to sink under it. This led to the insertion of a brace under the tie-beam, tenoned at one end into it, and at the other end into a piece of timber resting on a stone corbel, and placed vertically against the wall under the end of the tie-beam. The roofs at Hatfield, in the Porch at Facombe, and that in the old hall at East Meon, exhibit this arrangement very distinctly. The arrangement of the feet of the rafters in these roofs is worthy of remark. The ashlar pieces and the rafters are usually framed together with cross pieces, forming a triangular base for each rafter. Sometimes this cross piece is morticed on to a central plate, whilst in other cases there are two wall plates, and in many the cross piece is omitted. At Prestbury, in Gloucestershire, the outer rafter foot is most ingeniously let into a groove in the plate; and at Salisbury the cross pieces show the morticing for the tenons of the ashlar pieces in their face. Where there is an inside plate it is usually moulded, and a good example of a plate to a roof of this age was, and I hope still is, to be seen on the roof of Heston Church, which, we have all heard, is about to be destructively restored.

There are numerous other varieties of tie-beam roofs which must now be described. The roof still preserved on the barn at Easby Abbey is very noticeable. Here, in place of the framed common rafters, we have purlines resting upon a principal rafter, extending from the tie-beam to the collar. One of the purlines is strengthened by a brace on its underside, and there is a king-post above the collar. This roof is probably of the thirteenth century, and one of the earliest examples of a principal truss taking the whole weight of the roof, which, at a later date, became the most usual as it was the most scientific mode of construction. The roof of Polebrooke Church dates also from the early part of the thirteenth century. The principal rafter here is a great cusped piece of timber; and it is worthy of notice in how much of the early woodwork we find a partiality for this large, simple, and very effective cusping. The roofs of Adderbury Church, of Twyford, Bucks, of the old vicarage at Wantage, the Guesten Hall, Worcester, the destroyed refectory at Malvern, and Bagilly Hall, all of them works of the fourteenth century, afford sufficient evidence of this partiality. Some of these early examples are remarkable also for their flat pitch, and a few words must be said upon this point. As a rule the pitch of the thirteenth century roofs was undoubtedly rather steep than flat, but there are many examples in which the contrary is the case. The roofs at Polebrooke, S. Martin's Leicester, Sparsholt, Kiddington, and Adderbury, were all of them erected before A.D. 1350, and are of flat pitch. In Northamptonshire these flat early roofs were very commonly adopted on clerestories, as, *e.g.* in the remarkable thirteenth-century church at Warmington. In the Leicester, Kiddington, and Sparsholt examples, the tie-beam is cut out of very large timber, and sloped on its upper side to the pitch of roof, so that the ridge and purlines rest directly on it; and in order to support the enormous weight thus thrown upon the tie, a grand arch of timber is constructed on the underside, springing from stone corbels firmly built into the wall. Few examples of this kind of roof are more striking than that at Sparsholt, where the sprandrils between the arch, the tie, and the wall piece, are filled in with elaborate traceries. In the Polebrooke, Oundle, and Adderbury examples, upright posts support the ridges, which are further strengthened by braces to support the great weight which in a flat roof is thrown upon the ridge. At a later date, this construction was very common.

Mention has been made of king-post roofs as among the earliest developments that we have. The queen-post roof was a much later construction, and is of comparatively rare occurrence in old English examples. The barn at East Barsham, the church at North Walsham, and the late church at Henley in Arden, afford examples of the mode in which this kind of construction was applied. The North Walsham roof is of peculiar interest, owing to the very adroit way in which the tie-beams of the aisles are passed through the walls, so as to afford a means of tieing the nave and aisle roofs together in the most secure manner; and I may mention here, for the sake of comparison, the interior of a magnificent barn at Harmondsworth, in which the mode of construction is identically the same, the great upright posts in this example taking the place of the stone columns and arches of the other. The Harmondsworth barn, which may date either in the fourteenth or the fifteenth century, may also be compared with the principal truss at Bagilly, and one of the trusses at Sutton Courtney, in both of which the construction is very nearly the same, the roofs being essentially tie-beam roofs, though not obviously so. To the examples that have been given of queen-post roofs let me add one more—that of the kitchen in the Bishop's Palace at Chichester, and we shall at once see how our ancestors arrived at their most remarkable development, the construction of hammer-beam roofs.

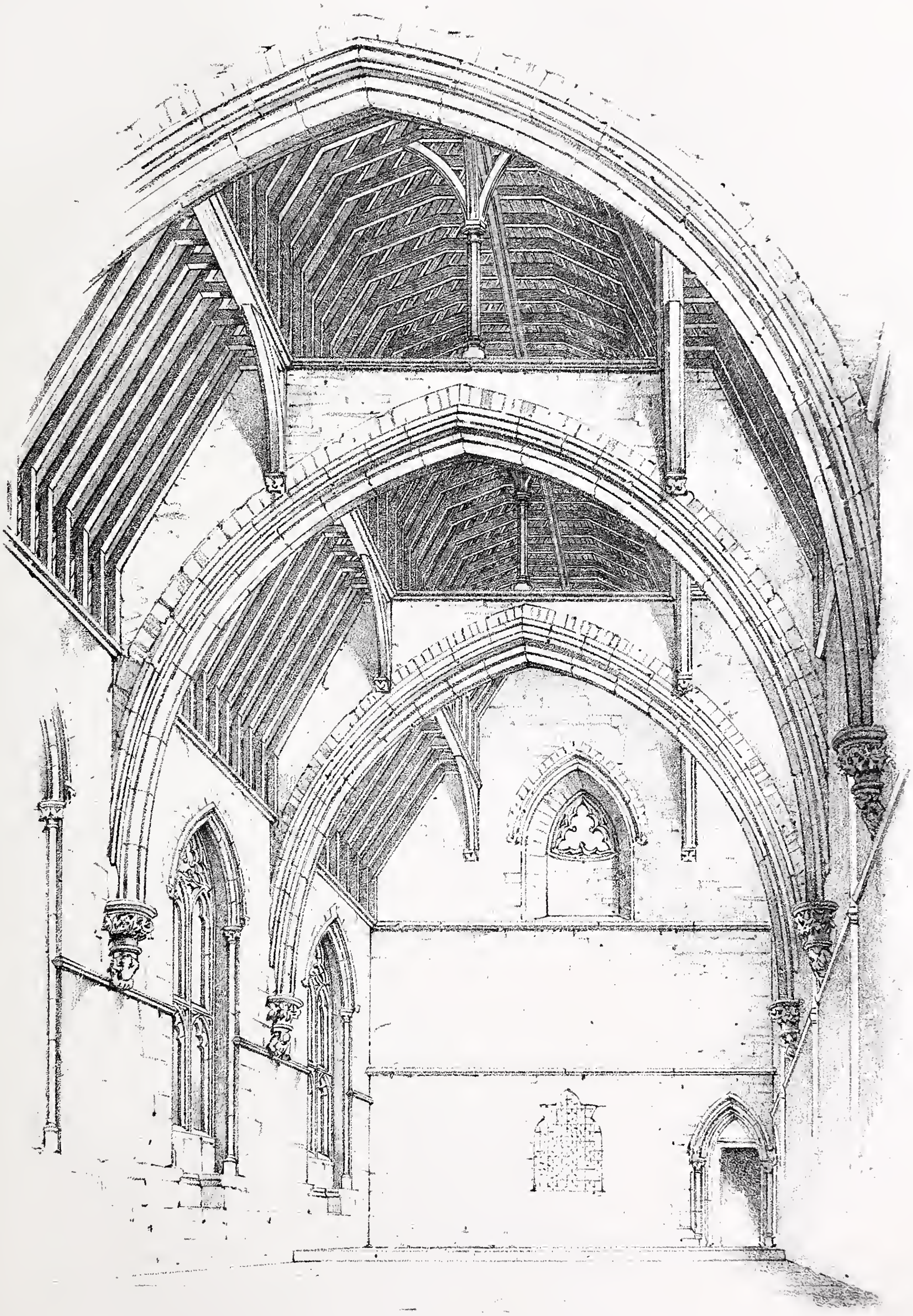
The roof of Westminster Hall (A.D. 1397) is one of the earliest, as it is undoubtedly the most magnificent, example of this kind of roof. Here the great curved brace which rises from the corbel at the foot of the wall-piece to the collar, binds the whole work together in so firm a manner as to make it all but impossible that there should be any considerable lateral thrust; and in this it aids very sensibly the triangular construction formed by the hammer-beam, the queen-post and the principal rafter. The roofs at Beddington and Eltham are similar in their construction, and in all three the science of carpentry appears to be carried to the very highest excellence. The more ordinary forms of hammer-beam roofs are generally formed over buildings of much smaller span than those just mentioned; and the absence of the large curved brace which distinguishes the latter makes them much more likely to exert a thrust upon the walls, and accordingly it is notorious that in very many cases this has occurred. In the fine hammer-beam roof at Croxton the strain was so great as absolutely to break short off the perfectly sound heart of oak pins, nearly an inch in diameter, with which it was held together; and it is to be feared that many of the finest of these examples are similarly in a dangerous condition, and ought to be held together, before it is too late, by iron ties and bolts. The construction of this class of roof is, however, so characteristic of the fifteenth, rather than of the fourteenth century, that it is only necessary to claim their first invention as due to fourteenth-century carpenters. A special description of them must be left to another time. It will be observed that the constructors of these roofs had always endeavoured to



Lithog^d for the R I B A by Kell Bro

Archbishop's Palace. Mayfield. Sussex.

Interior shewing the present state.



Lithog^d for the R.I.B.A. by Kell Bro^s

Archbishop's Palace. Mayfield. Sussex.

Interior shewing the roof restored.

carry the weight as much as possible to a point on the walls considerably below the wall plate; and we shall find, on examination of another and large class of roofs, that this was also attempted with success in another way and at an earlier period. Hammer-beam roofs grew, however, so naturally out of tie-beam roofs that it seemed necessary to mention their development to the neglect of the strict chronological arrangement of the subject.

The roofs to which reference is now to be made are those in which the principal trusses are framed with curved braces below the collar beams, these braces either stopping on the wall-plate, or being carried down to a point on the wall much below it. The example on an old Hall at Great Marlow is a good thirteenth century instance of the first plan. Here the all important point is that the curved brace from the collar to the rafter should be thoroughly well tenoned and pinned to the collar and principal rafter, and all tied firmly to the wall by means of a socket in the corbel which supports it. When this is the case, and the span is not so very great, this kind of roof stands very well; but it would be a grievous error to suppose that this is likely to be the case where the material is fir in place of oak, for the system of tenons and pins was not always secure in the former, and in the latter is well nigh useless. The roof at Kilverstone, in Norfolk, of similar construction, and only 16 ft. 6 in. in span, had nevertheless become quite unsafe, owing to the giving way of the oak tenons and pins.*

Towards the end of the fourteenth century we have the magnificent roof of the Guesten Hall at Worcester, now re-erected over the nave of a new church close to the railway station at Worcester; but the span of this roof—about thirty-five feet—was too great for its strength, and it was in a rapidly decaying and all but dangerous state. Sad though it is to see this, nevertheless it is impossible not to admire extremely the beauty of the work, and the extreme skill with which the decoration of the different ranges of purline-braces is contrived; and, as is usually the case in work of this date, the mouldings throughout are very good and effective. The defect of the work is, no doubt, the want of connection between the wall pieces and the principals. The former are absolutely useless, and the whole thrust of the roof, the pitch of which is an angle of 45°, was received by the top of the wall. Had the curved braces of the principals been properly connected with the wall pieces, it is possible that we might still have been able to look at this old roof in its old place. In the roof of S. Mary's, Reading, this defect was entirely remedied in one of the most perfect roofs ever constructed—perfect alike in design, construction, and scientific arrangement. Here the wall pieces are very bold, and the arched ribs, being securely tenoned to them and to the diagonal braces, hold the whole firmly together, and carry the weight down properly below the upper part of the walls. This roof has the peculiarity of having no collar beams to the principal trusses, the braces crossing each other instead; and above their intersection, and supported from it by curved braces, is a ridge piece, above which are a series of collar rafters connecting all the common rafters together. There are also curved braces to each pair of rafters below the collars, whilst the ashlar pieces at their feet, instead of being perpendicular, are also curved, so as to give to each pair of rafters throughout the roof an archiform arrangement. As will be seen from the details which I exhibit, this roof is particularly well moulded, and, as its date cannot be later than about the beginning of the fourteenth century, it is of extreme value and interest. The tradition is, that it originally covered the church of the Grey Friars at Reading, and was moved from thence to the church of S. Mary, and this is probably the fact, the church being altogether unworthy of its roof. Somewhat similar in its construction is the roof of the hall at Sutton Courtney, in the same county; and here we have a curious combination of the king-post roof with all the rafters framed together, and the kind of roof now being described. In this case the king-post springs from the collar, and there is sufficient similarity between it and the roof of S. Mary's, Reading, to make it probable that they are the work of one man; in particular, the addition of a label moulding to the main timbers is a very unusual feature, the old carpenters being, as a rule, very firm in their resolve only to mould the necessary timbers, and not to *add* mouldings to them for the sake of effect. In both roofs, too, the purlines are set vertically on the principal, and not as is usually the case, at right angles to it; but this is the case also at Westminster Hall, and in the magnificent roof which I now go on to describe at Penshurst. This is somewhat similar to those lately described, having an arch below, and a king-post and framed rafters above, the collar; but its peculiarity is the treatment of the purline, which rests on the collar and not on the principal, and is connected with the common rafters by horizontal and vertical ashlar pieces. The principals, as at Easby, do not go up above the collar. This roof must have been erected *circa* A.D. 1350, and its design is, in truth, a combination of the trussed king-post roof, and the arched-principal roof.

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* The roof of the kitchen at Stanton Harcourt is a fine example of this kind of roof on an octagonal base.

Somewhat akin to this class of roof are the examples at Mayfield and Ightham, in which stone arches or supports play a considerable part in the support of the roof, taking the place of principal trusses. The hall at the Mote House, Ightham, has one stone arch across it on which the king-post is placed, the rest of the roof being supported on wooden arched principals. Looking at this roof in connection with the remains of the hall of the Archbishop of Canterbury's Palace at Mayfield, we may decide pretty nearly upon the way in which this latter noble apartment was roofed. It had evidently wall pieces against the walls, above the stone arches which span the hall, from which curved braces were probably framed to support the purlines; and above the centre of the arch probably stood a king-post with framed rafters, as in the Penshurst and Sutton Courtney examples. My sketch will serve to show what was the probable original design of this roof, and I believe that it is an unique example, though, as has been shown, its original design may be guessed with some degree of certainty. It appears to me to be one of the most noble designs it is possible to conceive, and the class of roof to which it belongs illustrates a very interesting combination of the king-post roof, and the arched-principal roof.*

The roofs at Bagilly Hall, Cheshire, and of the destroyed Refectory at Great Malvern, are interesting examples, the latter mainly remarkable for the cusping of its framework, and because the principals are alternately arched and tied with a tie-beam. This system of cusping is evidently the work of a local carpenter. It was seen in the Guesten Hall, and the destroyed hall of the Deanery at Worcester, and it is an unfortunate fate which has doomed all three of them to destruction.

Something has now been said upon all, or almost all, the varieties of early gabled roofs, of which examples occur in England. But there is a large number of lean-to roofs of flat pitch, of which there are some illustrations on the wall. They are examples of fourteenth century construction, and require but little explanation. The braces in the aisle roofs of Cottingham Church are worthy of attention, as valuable helps, when the width of a lean-to roof is at all considerable. There is a rudeness about several of these examples, which speaks strongly of the hand of the country workman; and this must be borne in mind generally, in looking at most of these old roofs; many of them are on small churches in secluded spots, and the wonder is, rather, how they should have been so universally well designed in days when the means of communication were not so easy as they are now, than how it is that they are often so rude and unpolished in their workmanship. The comparison which one is tempted to make between their uniform goodness of material and honesty of execution, and the weak design and equally weak materials of many of those modern roofs, upon the design of which an architect is specially employed, makes it impossible not to award the highest tribute of admiration to them in almost all respects; whilst such roofs as those of Westminster, Reading, Worcester, Penshurst, Eltham, March, and generally those throughout Norfolk and Suffolk, are so very far beyond anything attempted in these days by ordinary architects, that one is tempted to think that they are almost beyond the power of the boasted science of the nineteenth century! Of course it would hardly be expected that we should have anything like a generally equal display of science in these old works, any more than we expect it at the present day. Some of them are manifestly badly constructed, and very many of them only in compliance with the fashion of the day or of the district. And the extent to which this was the case affords a curious refutation of the common belief in the existence in the middle ages of bodies of freemasons, or workmen, who moved about from one building to another, carrying their ideas and customs from one end of the country to the other. For nothing can be more clear than that the constructors and designers of these old roofs were to a very great extent local men. Their work, indeed, is much more obviously characteristic of particular districts than that of any of the other workmen of the times; for, though it requires a trained eye and careful study to detect some of the local peculiarities of the masons or sculptors of the middle ages, they are obvious, in the case of carpenters, to the most hasty and cursory examiner.

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* The illustration shows this Hall in its present state, and with the roof restored to what I believe to have been its original state.

With a few words upon the mode of framing employed, this (which is by far the most important) portion of my subject, may be dismissed. This was almost always dependent entirely on the mortice and tenon, stout oak pins being used; there is no instance, so far as I know, of the use of iron straps or bolts clearly belonging to the original construction of early roofs; and many of them, especially the waggon roofs of the West of England, have failed in consequence of the extent to which the rafters have been weakened by morticing. I may observe also that mitred joints are seldom if ever seen in old work. It is not until a late date, generally, that we find a ridge piece, except in the case of very flat roofs. The roof of Lincoln Cathedral has two longitudinal timbers on the top of the collar rafters, but this is a rare example of a longitudinal tie in an early roof. The roof at Wantage shews the principal rafters framed into a sort of key at the summit, and the Norfolk roofs are often similarly framed into a piece which, descending as a pendant, affords an opportunity for framing braces from the principal to the ridge, without a king post, and so supplying the necessary rigidity and stiffness to the length of the roof. The arched braces which were largely used for the support of purlines and other horizontal timbers, are a very important feature. They are ordinarily thin pieces of timber, laid on a rebate in the back of the principal rafter and purline. When used in this way they stiffen the whole construction, and help to support the under side of the common rafters, but they in no way support the purlines: and, accordingly, in some roofs, where the existence of a queen-post allowed of it, we find braces from the queen-post to the purline, as at Harmondsworth, North Walsham, and Westminster Hall. In these cases the purline is usually placed perpendicular, instead of sloping at right angles to the principal rafters. The illustrations of the Guesten Hall, Worcester, and the Marlow and Malvern Roofs, shew how the purline braces were treated. Sometimes, as in the Prior House, at Wenlock, we find two purlines placed near together, and the space between them filled in with tracery, binding the whole together into one very firm trussed purline. The Norfolk roofs have usually arched braces from the wall piece to the plate, and though these were mainly useful for ornament, they were intended to secure the entire immovability of the wall piece, on which so much depended. The common rafters, which are always in one length and notched for the purlines, are usually morticed and tenoned together at the ridge. Their dimensions vary, but speaking generally, they are about 6 in. by 4 in., but in some cases are as much as 8 in. by 6 in.,* or 7 in. by 7 in.† They are ordinarily laid flat-wise, and their feet generally project well beyond the face of the wall. In early roofs the common rafters are never chamfered, but in late roofs they are frequently either chamfered and stopped or moulded. Comparatively few roofs were boarded, unless it was intended to cover them with lead, in which case the boards were generally laid with a space of about one or two inches between them. At Crawley, in Sussex, the space between each rafter is filled in with boards let into a groove in the side of each rafter. In the porch roof at S. Martin's, Guernsey, there is a similar arrangement of boarding between the principal rafters of a curved roof; but in this case the boards are arranged horizontally, instead of vertically, as at Crawley.* Boarding was, however, constantly used on the under side of the rafters, in which case, it was usually subsequently divided by vertical and horizontal ribs into a succession of panels; this kind of treatment is often found in a portion only of a roof, as *e.g.*, over the rood loft, or over the altar, the remainder of the roof consisting simply of framed rafters. The mouldings of these roofs are, as will be seen from the details that have been given, generally cut with much skill. The workmanship is spirited, and though a little rough to the eyes of those who like to see sand-paper in the hands of a carpenter, nevertheless a model for modern workmen. It is seldom that mouldings are added to timbers in such a way as to make them look unconstructional, as in the case of S. Mary's, Reading, and the hall of a house at Sutton Courtney, where the arched brace of the principal has a sort of label added to it, which, had it been cut out of the solid, would have involved the cutting to waste of a very large piece of timber; and this the old carpenters never did, if they could possibly avoid it. They used some of the best timber in the world, but they used it carefully and economically, as knowing its value. One fault is common to most of the more ordinary description of roofs, the use, namely, of large quantities of sap-wood. It is rare, indeed, to find an old roof which is not suffering from this cause.

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* S. Margaret's, Leicester.

† Lincoln.

The pitch of old roofs was very various, and depended rather on individual choice than anything else; for though, speaking generally, it is true that early roofs were steep in pitch, whilst late roofs were flat, there are yet examples of very early and very flat roofs; and on the other hand, the Norfolk and Cornish roofs down to the end of the fifteenth century are commonly of good pitch. It is hardly necessary to say that the steeper the roof the less is the necessity for any direct tie at its base. There are examples of roofs with a collar so near the ridge, or with no collar at all, which depend entirely upon the steepness of their pitch, and the hold which their curved braces have upon the wall some distance below the plate, and which still stand after four hundred years' exposure. But if one is to apply the lessons which most of these works teach us, there are, I think, some which we shall be wise in taking caution by. In the first place, I repeat that wherever it is possible we should do well to introduce a tie-beam. If the walls are of good height, there is never any difficulty about this, and I hope that I have shewn that old tie-beam roofs are often admirable works of art. If, however, we have walls so low that our tie-beams would cut across openings, then we must have recourse to some of the other varieties of indirect tie which the old carpenters invented. There seems usually to be no reason why we should not avail ourselves of iron bolts and straps for the greater security of our framing. The old carpenters seldom if ever used iron. Possibly this was because all their work was in oak, with which it was not convenient to use it. They trusted entirely to tenoning and pinning with stout oak pins; but it would be madness to trust entirely to these where we use fir, and hence to emulate their designs we must use iron. One of the commonest defects of early roofs is their tendency to fall out of the perpendicular, the lengthway of the building. This tendency was counteracted when it was discovered, by the adoption of purline braces, and braces from the king-posts; and we are not wise to forget, as many of us do, that what happened to old roofs is much more likely to happen to ours.

I am well aware that in insisting upon precautions against decay and disruption, in asking for timber of large scantlings, and generally in recommending old roofs as models, I am arguing in vain with architects who consider it their business to build for the wants of to-day, without thought of those who come after. Yet if I believe, as I do most firmly, that a large number of the roofs executed now-a-days, which pretend to follow mediæval examples, will most certainly last but a short time; and if I believe, as I do equally firmly, that we shall never have even tolerably good art as long as men are careless about that first necessity, good construction, then the more strongly I call attention to the great gap which separates the strong and safe construction of carpenters' work in the middle ages from their weak and unsafe work in the present day, the more am I doing my duty to my art. There is an inscription on the beams of the roof at Crawley, which the old carpenter cut without much idea that I should read it to you with a meaning which he never saw in it. It is, "Man in weal beware: Beware before what cometh behind;" and it were well if some of us were to remember these words when we next design a roof without regard to what cometh after!

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* The roof at Lingfield is similarly constructed. The roof in Holy Trinity Church, Coventry, affords an example of carved boarding between moulded rafters. At Hadley, Middlesex, the boarding of the transept roof is let down into a rebate in the rafters without any use of nails.

I now proceed to the next branch of my subject—the construction of wooden spires and turrets. There are numerous examples of these, and generally speaking, the system of framework is much the same. In order to secure a firm base, the framework is ordinarily commenced some few feet below the upper part of the wall on which the spire is set; and then on the top of the wall four large beams are laid crossing, and framed to each other, so as to form four points of support within the tower; upon these four intersections* are placed four uprights, and these again are held in their places by diagonal braces crossing each other, and securely halved and pinned with oak pins wherever possible. Purlines framed to the octagonal plan of the spire are occasionally introduced, supported by struts from this framework, and on these the common rafters rest. Upon the top of the four lower upright timbers, when the spires are of large dimensions, another system of crossed tie-beams is introduced, upon which the same construction is repeated as below. The spire of Chesterfield Church, constructed in this way, has, as is well known, failed, and twisted to such an extent as to be one of the architectural puzzles of the day. There can be little doubt that this was caused, to some extent, perhaps, by some defect in the lead covering, and the consequent admission of wet, and decay of some of the timbers, but mainly by the effect of the sun on the south and south-west sides of the steeple, which, if the timber were green, would be very considerable. And, in illustration of this, it may be mentioned here, that most of the old spires constructed of timber and covered with lead are twisted in the same way. The spire of the church at New Walsingham is an example of this; and, on the continent, the spire of the church at Mayen (near the Moselle), and that of one of the churches at Dijon, are examples of at least as great a curvature of the lines of the spire, though in neither case has the whole work fallen so much out of the perpendicular as the Chesterfield spire has; and examples of the same thing might easily be multiplied. In England the usual custom was to cover these steeples with cleft oak shingles—a light and very durable covering—and in no case does a spire covered with this material appear to have failed. These spires are very frequent among the old churches of Kent and Sussex, and are exceeded by few in simple beauty and appropriateness of character.

The churches in the Eastern counties have often a very delicate and small spire covered with lead, rising from the centre of the roof of the tower, but the dimensions of these are so small as not to be of much importance. Hunsdon Church, near Ware, is an example of this class. At East Harling, in Norfolk, there is a wooden spire, with spire lights and pinnacles, covered with lead, which recalls the magnificent continental examples of this kind of construction. In this case the timber is nowhere exposed to view, but covered with lead beaten down round its mouldings and carvings. But in England we have no very grand example of this kind of carpenter's work, and we must go to Amiens if we wish to see how the enormous weight of a spire or flêche between one and two hundred feet in height, may be successfully carried from points of support far outside its natural base. The wooden turrets supported from the floor, and so common a feature in the old English country churches, ought not to be forgotten. They almost always have four angle posts framed into heavy sills, lying on the floor and framed and braced together above; and finish externally with a low spire. The stone spire of Salisbury Cathedral is filled with a complicated framework of wood, constructed in a very similar way to those just described;

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* When the spire is very small, it is constructed with a king-post upported on two cross beams, as in the example in Trotton Church, Sussex.

it is easily accessible, and (which is important) it is not too dark to see the construction, as it usually is inside a shingled spire. Here we see a central post, and four posts outside it forming a square: these are framed together with horizontal ties, strengthened by arched braces; and though all the woodwork is rather rough, considerable attention is shewn to the design, and the timbers are chamfered and stopped. It is not a bad illustration of the absolute inability of the old carpenters to do their work without some attention to design.

The use of timber for the construction of the whole framework of buildings was in many districts very frequent indeed. One of the oldest churches in the kingdom—that at Greensted, in Essex—is constructed of half-round pieces of timber, and there are instances at a later date of wooden churches (of which Lower Peover, Cheshire, and S. Leonard, Ribbesford, the desecrated but most interesting Church at Newtown, Montgomeryshire, and the old church at Newland, Worcestershire, are examples), some of which have wooden arcades between the nave and aisles. It is in domestic buildings, however, that wood was most used in the Middle Ages; and the variety of examples is so great, and their character so well known, that it is impossible this evening to do more than just mention them. The foundation on which they are built is ordinarily of stone or brick, and this is carried up to various heights; sometimes only up to the ground line, or to a plinth just above the level, and at others up to the under side of the first floor. In the street at S. Peter's Port, Guernsey, stone party walls are introduced between the wooden houses, and these, coming out to the face of the building, and boldly corbelled forward so as to correspond in projection with the woodwork, were no doubt found to be necessary in towns, in order to stay the progress of fire. The system of construction was generally uniform. Upon the brick or stone base was laid a large plate, into which the corner-posts and intermediate principal posts were tenoned and pinned. Horizontal pieces were framed above and below window and other openings, and curved braces, framed across the front of the smaller intermediate timbers, connected and stiffened the whole. The angle posts were a very important feature, and where (as was so often the case) the upper story overhung, they are necessarily of very large size, and often covered with sculpture. The joists forming the floors of the next stage ordinarily projected forward considerably and were rounded, moulded, or carved at the end, and supported by curved braces from below, and upon these again another plate was laid, above which the same construction of posts and braces was repeated. The gables were finished with a considerable projection, protected by verge boards, upon the decoration of which all the skill of the workman was exerted. The spaces between the wooden framework were either filled in with plaister or with brickwork. Timber houses are, as has been already observed, almost always boldly corbelled forward in each stage, and owe much of their extremely picturesque effect to this arrangement, whilst at the same time their strength was not at all diminished by it. It is a remarkable evidence of the enormous number of wooden houses erected during the Middle Ages, that, in the volumes of Mr. Parker's "Domestic Architecture of the Middle Ages in the Fifteenth Century," a large proportion of the examples illustrated are executed in wood; and though the remains of the fifteenth century are of course much more plentiful than earlier works, there are nevertheless many remains of the latter. The curious thirteenth-century window at Coventry, now built into a modern house, is a valuable, if not unique, example; and there are at Lewes some equally good examples of fourteenth-century windows, whilst the fine fourteenth-century head of a doorway at Goudhurst, and the still earlier wooden door-frame, with a square trefoil head in the south wall of the chancel of Ascott Church, Oxfordshire, are examples, whose interest is much increased by their extreme rarity. The framing of the gable end of Guesten Hall, Worcester, may also be named as an early example. Mention has already been made of the roofs of some of these wooden domestic buildings, and it is evidence of the uniform way in which the ideas of the mediæval carpenters were carried into execution, that barns—as at East Barsham, Hardmondsworth—and stables and offices, such as we see at Hever Castle, were all constructed on the same principles, and with the same consequent solidity and general goodness of effect.

The floors and ceilings of the Middle Ages require a short notice. The former were not by any means commonly executed in wood on the ground floors of old houses, and in churches the only wooden floor ordinarily is that under the choir stalls, though as far as can be judged from the representations in illuminated manuscripts, the foot-paces or floors under the altars were also often of wood. The wooden floors under stalls were often raised on a stone plinth, in which ornamental openings were perforated for the sake of ventilation. The floors of upper rooms were usually constructed with heavy and square timbers resting on wood plates, which formed the cornice to the rooms. Under these again were occasionally stone cornices, and the moulding of the rafters and girders below them were the principal decorative features. In other cases the under sides of the floor joists were covered with boarding, and this again divided by small ribs into panels with bosses at the intersection. The ceilings of the nave and of the eastern part of St. Alban's Abbey Church are remarkable examples of fine flat ceilings of very early date, and the under side of the floor in the tower of St. Cross, and of the similar and well-known floor in the chapel of Merton College, are illustrations of this kind of work at a rather later date. A few words must be said upon the wooden groined ceilings which are of not unfrequent occurrence in old buildings. The choir and lady chapel of St. Albans, the church at Warmington, and the cloisters at Lincoln, the towers of Exeter and the lantern of Peterborough, are fine examples of this kind of ceiling, and all of them of early date. The thirteenth-century church, at Uffington, Berks, was also evidently groined in this way above the eastern part of the chancel, for, whilst the walls and buttresses were wholly insufficient to resist the thrust of a vault filled in with stone or chalk, the stone springers for the vaulting nevertheless remained. All these wooden vaults were constructed in the same way. They spring from stonework carried up as high as was required to free the ribs from the wall, and there was no special mark of division at the point where the stonework ceased, and the woodwork commenced. The boarding was let into a groove in the sides of the ribs, or laid on a rebate. There seems to be no good reason why this kind of ceiling should be condemned, as it has been by some writers, as though it were unreal or in any way a sham. It is, in truth, nothing of the kind, and no attempt was made to make the work look like stonework. The boarding was frequently feather edged, and grooved and tongued, and thus obviously of wood. The advantages which it possesses over stone are considerable—for, first, it may be introduced in buildings not calculated to resist the thrust of a stone vault; and, secondly, it may be carried far up into the roof and above the top of the walls, which in stone vaults is always, within a little, the limit of internal height attainable.

Cloisters, Porches, Doors, and Canopies over Doors.—There are many examples, either of wooden cloisters, or (as in some of our old almshouses) of passages corresponding with cloisters. The Dean's cloisters at St. George's, Windsor, are a good example, with sills, upright posts, and arched and trefoiled braces connecting them with the plates. Their date is doubtful, but they are probably not later than the end of the fourteenth century. The doorways of wooden houses were a favourite subject of decoration, and are frequently protected by flat canopies supported on boldly projecting braces. The old houses in York afford several examples of this feature. The canopy in front of the door at Goudhurst, Kent, is a good fourteenth-century work. The wooden porches of the middle ages are very numerous, and of all dates. One of the earliest remaining is that on the north side of Horsemonden Church, Kent,—an excellent example both in general design and in all its details. The porch at Facombe is of similar date, and others have been drawn, I think, by Mr. Brandon. Their construction is generally very similar. Upon a stone foundation is placed a cill, into which are tenoned upright angle and door posts, and generally one upright in the centre of the side. Cross pieces are framed to these a short distance above the sills, and a plate at the top, and the open spaces between the cross pieces and plate are filled in with open tracery, often of the most elaborate kind. The gables are finished with verge boards, and the roofs treated in the ordinary way. These porches are generally placed on the north side of the church, in order to protect them from the influence of the sun.

Oak lych gates are peculiar to certain districts. That at Beckenham—a well-known example—is one of the most picturesque, and it owes its character to the arrangement of its supports with their necessary braces, and not at all to any beauty of detail, of which there is none whatever—its builder rightly feeling that its exposed situation on the public road made the severest simplicity of all its parts most desirable. The remains of ancient doors are very numerous. The earlier examples consist usually of ledges only, on which the boards were nailed. Sometimes, as in a fine example in the Refectory at Beaulieu, these ledges were framed diagonally, but with a curious disregard for symmetry or uniformity in the size of the panels. The door at Lincoln is an example of the same date. That at St. Cross, of the same date, has the framing arranged rectangularly, and this is the more common arrangement in all subsequent doors—the Lingfield and Westminster doors are instances of this in the fifteenth century. Often, as at Brooksby and Luton, the door is adorned externally with tracery. This is especially the case with doors in the fifteenth century, when the smith's work was so inferior to the work of the men who made the glorious thirteenth-century hinges, that there was no longer any special reason for leaving room for its exhibition. The internal framework of the door at Luton is an exquisite example of the fourteenth century, and the carving on the door at Cobham is also very effective. In the Rood Screen at Exeter are doors formed in the same way, but with diagonal open framing, and without any boarding, so as to be open through all the quatrefoils.

Wooden windows have been already mentioned, but it may be added here that wooden windows were sometimes introduced into stone, brick or flint walls. The church at Englefield, Berks, affords an example of this in the fifteenth century. Stone windows had often, also, oak lintels inside, in place of stone arches, and this was especially the case in clerestories, where the space was so small as to render the insertion of a stone inside arch a matter of difficulty.

Staircases.—These were very seldom constructed in wood. That, in the Hall of St. Cross Hospital, is a fair example of their old treatment; but they are often much more rude, and constructed of heavy logs of timber. There are also some examples of newel staircases framed in wood, but none in England which will bear comparison with the very fine example in the north-west tower of Rouen Cathedral.

Bell Wheels and Carriages, Luffer Boards, Fencing, Scaffolding, &c., &c.—Many ancient bell wheels and carriages remain, and those at Wymering Church are examples of the best kind. The carriages are simply framed, with arched braces to support the central part under the sockets, on which the wheel hangs, and the chamfering of the spokes of the whole is admirably executed. Luffer boards seldom remain in their old state, and seem always to have been of inferior type to the enormous continental examples. Sometimes, as at Addington, Bucks, they are merely boards cut out to the size of the window, and perforated with small cusped openings. Gates and fencing were constructed very much in the same way as at the present day, and good examples of the former are to be found in illuminated manuscripts. Of scaffolding there are very few particulars to be gathered. No doubt the access to it was generally by inclined planes of wood,* such as are ordinarily used on the Continent at the present day. In one of the sculptures in the Chapter House at Salisbury, a workman is represented ascending by such a contrivance. But ladders were in use, and of the kind we now have—witness the painting in the Lady Chapel, at Winchester, of an artist painting the figure of the Blessed Virgin, whilst the Devil takes his ladder away. And there were, as well, ladders of that much more solid description often met with in old belfries—as at Monkland, Hereford—consisting of enormous pieces of timber inclined to a considerable slope, and on which heavy triangular logs are fastened for treads. Materials were hoisted from the ground by ropes coiled round great wooden wheels, inside which one or two men walked as in a sort of treadmill. One of these wheels, admirably designed, still remains in the steeple at Salisbury Cathedral.

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* In the walls of the keep of Chateau Coucy, a series of putlog holes exist all round it. There can be no doubt that these holes were left after the inclined plane by which all the materials had been taken up had been removed. Inclined planes are represented in the Mosaics at St. Mark's, Venice. At Ratisbon a tower was constructed with inclined planes, by which even laden animals could ascend with materials for the highest part of the building. This still remains.

The second head of the subject may be treated of at much less length, than that at which it has been necessary to speak hitherto. Articles of church furniture, such as screens, seats, stalls, pulpits, and the like, have been made the subject of study more, perhaps, than the more important constructions which have been described in the previous portion of this paper. They present, too, less of general character, and a treatise on them must, to some extent, consist of a special description of each example of every class; and this is more easily done by means of illustrations of several of the more remarkable remains, than by descriptions of them. Of old screens an enormous number of examples still exists, and many are of early date. The earliest is probably the semi-Romanesque screen at Compton, of which I exhibit a drawing, and the next in date the early thirteenth-century example at Old Shoreham. The mouldings of the slightly later screen, at Northfleet, are given on one of my drawings. Very nearly about the same date is the simple screenwork at Sparsholt, and the fine screenwork at St. Mary's Hospital, Chichester. Turning from these early, middle-pointed examples to the complete middle-pointed style, we have numerous examples. The screens at Thame and Ilmer, evidently the work of the same hand, are early examples. The fine woodwork from Ottery St. Mary, of more massive character than is usual, is of the same date; and close in succession to it come the screens at St. John's, Winchester, Roydon, Ewerby, the Chapel in the Palace of Chichester, Cliffe-at-Hoo and Lavenham, and the fine screen and stalls in St. Margaret's, Lynn. The lower panels of early screens were generally filled in with feather-edged, grooved and tongued boards. The monials were delicate columns, and the tracery was very simple, and cut out of long pieces of board, from two and a half to four inches thick. The capitals were pinned to the tracery with vertical oak pins, as in the example from St. John's church, Winchester. At a later date the lower part of the screen was panelled, the monials were moulded, and the whole work was much more complex. When there was a rood loft, the framework was carried to a stout upbeam, and another beam let into the wall on each side was provided for the support of the loft, and the space between this and the screen filled in with groining or coving. The screen at Ilmer is a rare example of a wooden screen resting on a stone base.

What was said as to the general ignorance of early examples, applies especially to seats and stalls; but this is in part owing to the fact, that in our early churches wooden seats were not often introduced. The usual contrivance was a stone seat, sometimes against the outer walls, and occasionally round the base of the columns, on which probably the women and old people sat, whilst the rest of the people stood and knelt on the floor. The examples of desk and seat ends, which are given on the sketches I exhibit, have been selected rather with the object of giving illustrations of the rarer kind of terminations, than as a complete conspectus of all that was done in the period. The Polebrooke example is, no doubt, of the thirteenth century; whilst those in S. Mary's Hospital, Chichester, Beaudesert, East Meon, and Didcot, are probably not very much later. The desk end at Compton is of middle-pointed date, the ornamental circles on the end being sure indications of this date. Other examples of these ornaments are seen on chests at Winchester and Ewerby. There are obvious differences between the few remains of early seats and the later examples. The former have generally their ends cut out of the solid; I know none which are framed. The ends are seldom square in outline, but usually cut in curved or cusped outlines, and they have simple and little carving. Of early stalls the examples are more numerous, and sections of a few are given on the drawing on the wall. Those at Winchester are altogether the finest examples remaining, full to overflowing of beautiful detail and lovely carving, and exquisite in every portion of their design. Those at Hereford are very fine, and other magnificent examples remain. Remains of these early fittings will sometimes be found built up among modern pews, At Selby the stalls (concealed in this way) are the most delicate and refined in their design that I know, whilst at Clifton Campville and Wyton there are small remains; at Exeter there is a great number of splendid misereres re-used in the modern stalls, and at Salisbury a most admirable assemblage of stalls. In these examples you will observe a delicacy of curve and a refinement of design far in advance of that which marks the later works of the same kind, and they deserve, therefore, the most careful study. Look, for instance, at the Salisbury stalls; they are delicate and refined in every point, the carving of foliage is admirable, and the ranges of dog-tooth and other enrichments in their mouldings are most effective. They are, at the same time, perfectly quiet, and free from straining after effect, and put to shame the gimcrack combinations of wood and iron, utterly unlike any old examples, painted every shade of queer colour, with which—I suppose because we have no good carpenters—it is now the fashion to disfigure our churches.

The old chancel arrangements were usually somewhat different from those to which we are now used. In parish and the smaller collegiate churches there was seldom more than one row of stalls. There were no subsellæ, and only a desk in front of the stalls. Probably, as we see in illuminations, and at the present day in many foreign churches, there was a large central lectern for the choir to sing at, out of one noble illuminated book. The earliest English example of the desk before the stalls that I know, is at Rochester, built up in the modern stall work, and which, as you will see, is a low desk for kneeling at, and probably dates from the end of the twelfth century. At Salisbury none of these desks remain; and at Exeter, where the collection of carved misereres is the best in England, they alone remain, preserved evidently from the earlier church when the present choir was built. In Wells cathedral there was, a few years ago, some very fine oak stall work of the fourteenth century. I exhibit a drawing of one of the traceried ends next the gangways leading to the upper stalls. The outline is rather foreign than English, but the bosses on the top were finely carved with naturalesque foliage. These fittings have all disappeared. I suppose there were no carpenters in those parts, so the architect got rid of the old rubbish and fitted up the choir with a long range of stone stalls—parson coolers—and so soon does the memory of old things pass away, that when I was last at Wells the verger vowed very positively that they never had any such work as that which I sketched there in 1847! The small parish church at Etchingham used to (and may still) contain one of the best examples of screen, stalls and desks, of good fourteenth century work, that I know; and there are a great many more or less perfect examples in churches all over the country.

Time and your patience will both fail if I attempt to complete my subject, as I had intended, by some reference to all the heads under which it naturally presents itself. Suffice it to say, that in England we have examples of every kind of furniture and fitting for our buildings, all designed as well, and in the same style, as the work I have been describing. The wooden retable at Upton, the lecterns at Leighton and elsewhere, the church chests, the cope chests, the wooden sedilia, the tables, the vestment presses of our Mediæval churches, are all alike admirable, and I exhibit drawings of early examples of all of them, to which I can but refer in this very general way. So, too, I can say nothing about domestic furniture and utensils, or about the vast collection of examples of woodwork of various kinds, which may be found in the pages of Illuminated Manuscripts. Each of these subjects would afford ample matter for a longer paper than this. I must, however, make a few remarks upon the character of the mouldings and sculpture of early woodwork, two matters in which the art of our forefathers is displayed in the most conspicuous manner.

The little sculpture of wood sparingly introduced by the early artists was always thoroughly good of its kind. The finish of the wall plates in the Horsemonden porch, and the carving of the miserere seat, so curiously preserved in the midst of woodwork some three hundred years later in date, in Henry VII.'s chapel, are fair illustrations of the goodness of the earlier sculpture; and it will be seen, if this kind of work is attentively examined, that it was wrought altogether on the same principles as the corresponding sculpture in stone. We see the thoroughly conventional early school, the naturalesque middle-pointed school, and the again conventional third-pointed school of carvers, succeeding each other in exactly the same way as among the contemporary workers in stone; the main difference between the two being, that the work in wood is ordinarily very much more thin, flat, delicate and sharp than the work in stone. The carving in wood has always, also, some limits set to its exuberance by the nature of the framework in which it was wrought. It has been observed before that in carpenter's work it was always the rule only to mould the useful members, and so it was also as regards the carving. It was not either useful or convenient to put on to a piece of oak framework a mass of oak to be carved as a boss or a stopping to a label (this sort of device was reserved for the ingenuity of nineteenth century architects), and so it will be found that most of the old wood carving is so contrived, as to be wrought out of the same plank or thickness as that which is moulded, or else is a separate piece of wood—in a spandril, for instance, enclosed within the constructional members. The spandrils in the arcades behind the stalls at Winchester Cathedral are an admirable example; they are carved in thin oak, perforated in all directions, and then set forward about half an inch in advance of the back panelling. The effect of this is, as may be supposed, to give the carving the most distinct relief; and it is an effect strictly lawful, because it was impossible in other material, and yet natural in woodwork. The same attention to the material will be found exemplified very remarkably in all old wooden mouldings. The accompanying illustrations will show how extraordinarily minute, delicate and sharp they were. In the stalls at Selby we see an elaborate cap, only $1\frac{3}{4}$ inches in height; at Winchester a band $\frac{7}{8}$ths of an inch in height, and yet consisting of four distinct members, and showing in elevation as many as eight distinct lines.

The whole of the early mouldings, of which I exhibit full size drawings, are such as could not be executed in any other material; they are sharp, delicate, minute, and quaintly undercut. Every curve is subtle; every alternation of round and flat and hollow thoughtfully contrived, graceful, and yet vigorous. They are very often unlike any stone mouldings, just as many wooden traceries (as *e.g.* those of the screen at S. Mary's Hospital, Chichester, and the stalls at Lancaster) are quite unlike what could conveniently be executed in stone. They deserve, therefore, the highest praise, and in spite of a bad fashion which obtains just now of ignoring the value of mouldings, I maintain two propositions in regard to those which I exhibit. 1st. They are very English in their character, and therefore ought to be admired by Englishmen; and 2nd. I venture to assert that if a thoroughly accomplished artist, who had never seen or heard of English work, were to study attentively one of these sheets of mouldings, he would not fail to say that they proved conclusively the existence of a school of art in this country of almost unsurpassable excellence; and if this is true it cannot be bad advice to those who want advice, to tell them to study these English mouldings for themselves.

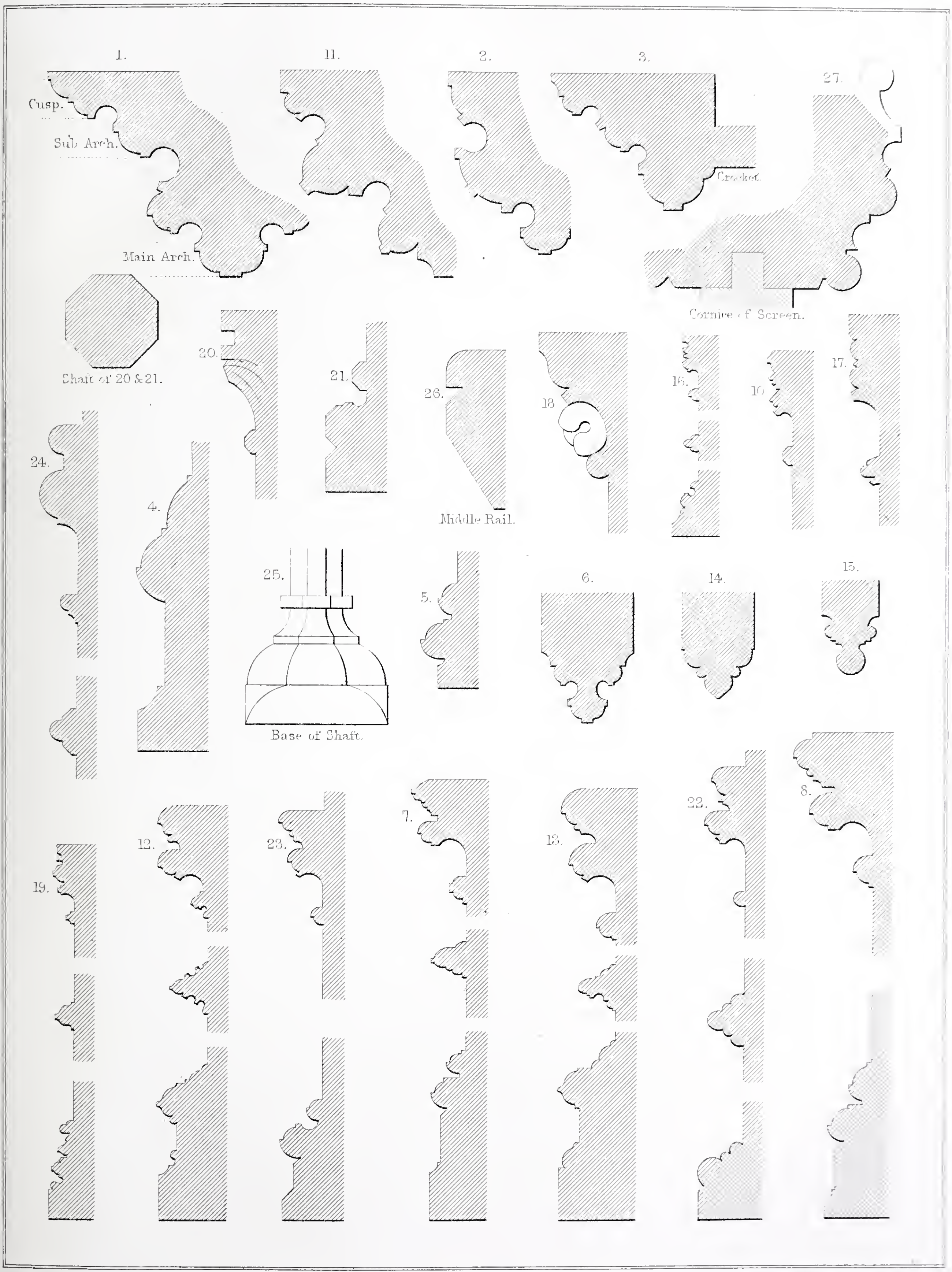
I shall conclude with one or two observations which arise naturally out of my subject. You, most of you, probably, know the views which I entertain about our National Christian architecture. How firmly I believe it to be the only form of architecture which we English architects ought ever to practise, and how bitterly I deplore the anti-English and Pagan developments with which, for the last three centuries, this country has been deluged. Then you can imagine what joy it is to have to speak to you upon a subject which proves that the form of art which I worship so thoroughly is no dead thing, no *rechauffé* of the past, but one instinct with life and beauty. I have shown you, hurriedly, it is true, that in spite of its perishable nature we still have examples of every kind of work in wood, wrought by our own forefathers, and the endurance of so much of which to the present day, is the best evidence that it is fitted for our climate and our wants. On the other side what do you see? Why, a carpenter's trade, which has become so low, so degenerate, and so bad, that it no longer ventures to show its face, that it contents itself with executing almost every bit of its work with no end above that of just carrying slates or supporting ceilings, and which has so little permanence in its construction or beauty in its design, that nobody trusts the one or admires the other. Well, is it wrong to construct timber roofs, and to let them be seen? If not, how is it that for ages our architects have been ashamed of them? They had no authorities forsooth among their classic loves, and so they found it convenient to disregard those of their own country. Again, is it wrong to regard the material in which you work, and to make some artistic use of one of the two great building materials which God has given us? If not, why have our architects for ages done their best to lead men to suppose that the joinery, the furniture, and the fittings of our houses and churches ought to be bald and ugly, and badly framed and glued together? The truth is that, dispute as much as we may as to who were the best masons, or who were the best sculptors in stone, the question as to the age which produced the carpenters is one which admits of no dispute whatever for an instant. This being so, let me entreat those among you who are beginning the study of your art, to remember how enormous the advantages are which this country offers you. It is, indeed, one vast museum, full of precious cabinets, fitted on all sides with gems and jewels. You have but to look around you, and on all sides you have material for study. Do all of you know the woodwork of our great abbey of St. Peter, its roofs and its furniture? If so, do you know the carpentry at St. Albans? or the singularly rich store which still remains at Salisbury? If you do not, take my advice, walk from hence to Salisbury, examine every church on the way, and finally devote yourselves to drawing every bit of old woodwork you can find there. Draw the magnificent roofs over the vaulting, observe the quaint ingenuity of those over the aisles, draw the stalls, the cope-chest, the vestry-chest, the table in the Chapter House, the lovely monument of William Longespée, the framework in the spire, the wheel for raising stone for the tower; study all these carefully, marking all the niceties of treatment, the mode of framing, the system of moulding, and the character of the carving, and I venture to say that when you have done this you will know more about the real carpenter's art than you will ever learn from the ordinary routine of an office, or the reading of all the text-books you can collect upon your shelves. Act on my advice and you will thank me for giving it, for long before one is old, one finds oneself too busy to sketch and study old examples as systematically as one could wish, and as I learnt my art by walking about England with a knapsack on my back, so I venture to urge you to do the same.

To many of you I owe an apology for reading a paper which of necessity deals with matters with which you are more conversant than I can pretend to be. It was impossible to avoid this, and I have purposely endeavoured to speak rather to my juniors than to my seniors. But to all of you I repeat my conviction, that no good school of architecture would ever venture to ignore the work of men, who were such consummate masters of their craft as the English carpenters of the thirteenth and fourteenth centuries, and in whose honour the verse in the Psalm may justly be repeated, " He that hewed timber afore out of the thick trees, was known to bring it to an excellent work."

The PRESIDENT said it had been suggested to him that the paper with which they had been favoured this evening, was so full of matter, embracing so many subjects and topics deserving of the consideration of the members, that it would be desirable to adjourn the discussion till the next meeting. He fully concurred in the suggestion, and he hoped those gentlemen who were acquainted with the subject would then come prepared to discuss it in a way which its interest and importance, as well as the able manner in which it had been brought before them by Mr. Street, deserved.

Mr. BENJAMIN FERREY expressed his entire concurrence with the suggestion, as he felt the subject could not be discussed in the few minutes that remained to them this evening. He had listened with the greatest delight to the admirable paper with which they had been favoured, and he was sure he expressed the unanimous feeling of all present when he proposed a cordial vote of thanks to Mr. Street for his valuable communication.

The vote of thanks having been unanimously passed, the meeting adjourned



G.E. Street, del.

Lithographed for the R.I.B.A. by Kell Bros.

REFERENCES TO MOULDINGS.

NUMBER 1 to 10. FROM STALLS, WINCHESTER CATHEDRAL.
11 „ 14. ST MARY'S HOSPITAL, CHICHESTER.
15 & 16. SELBY CHURCH, STALLS.
17. BURY, HUNTS: BASE OF LETTERN.
18 & 19. BEVERLEY: SEDILIA.
20 & 21. COMPTON CHURCH, SCREEN.
22. SALISBURY CATHEDRAL.
23. CHICHESTER: SCREEN ON BISHOPS PALACE.
27. OLD SHOREHAM CHURCH, SCREEN.

A DISCUSSION ON MR. G. E. STREET'S PAPER ON ENGLISH WOODWORK IN THE THIRTEENTH AND FOURTEENTH CENTURIES,

At the Ordinary General Meeting of the Royal Institute of British Architects, March 20th, 1865,

Thomas L. Donaldson, President, in the Chair.

The **President** invited discussion on Mr. G. E. Street's Paper, "On the English Wood-work of the 13th and 14th Centuries," and remarked that he was not previously aware that what was called the regular trussed principle of roof had obtained in Mediæval carpentry at so early a period as that indicated in the paper—viz., the 13th Century. He admired the boldness with which Mr. Street had advocated the tie principle of the horizontal beam; for they could never be safe, in adopting any combination of parts for a practical purpose, unless they proceeded upon that sound principle of construction for which the author of the paper contended. It would be a great fallacy if they merely looked to the general arrangement without knowing the practical results to which they tended, and in the absence of ties, roofs had the pernicious effect of thrusting out the walls. When they considered the roof was a part so seldom seen,—for he was speaking more particularly of those roofs which were concealed,—it was of the first importance that the principles of utility and soundness of construction should not be sacrificed to ideality. The perfection of form and combination of the hammer-beam roof were to be found in the present roof of Westminster Hall; and the illustration from the Archbishop's Palace, Mayfield, showed that transverse walls might have suggested that mode of combination of the timbers, which carried the weight of the roof down to a lower point; thus getting the mass of the upper part of the wall as a resistance, diminishing the height of the supporting wall, and throwing the pressure lower down and nearer to its immediate centre of gravity.* The roofs of the old tythe-barns, a large number of which existed in Wiltshire, were the finest specimens of combinations of carpentry that could be brought forward. With their centre and side aisles, they partook of a church-like appearance, and the combinations were arranged with much simplicity, taste and judgment. Their proportions were good, the pillar posts of the central avenue being not too large, yet just sufficient for the weight. The members were greatly obliged to Mr. Street for having called their attention to a very interesting and practically useful branch of the subject of construction and art in early English carpentry.

Mr. **Thomas Morris**, Associate, thought the discussion of the carpentry of the 13th and 14th Centuries must be approached with some recollections of what had taken place previously. The Normans, before they came to this country, had been victorious in Italy, and they had thus grown conversant with the Romanesque forms of construction. The church of San Miniato, at Florence, and that of San Zenone, at Verona, were built much on the type of our ancient Norman churches. They had arcades along the nave, and from the alternate piers vaulting shafts were carried up to the clerestory. Then, from one of the piers to the other, an arch was thrown across; and the same plan of alternate piers and vaulting shafts was found in this country, in the Church of St. Peter, at Northampton. He had an impression it was intended that the cross arches should also have been employed there; but Mr. Gilbert Scott, in restoring that edifice, did not find sufficient authority to warrant their introduction. However, in the other examples named, the two sides of the clerestory were connected by arches; and he believed that when beams were employed for supporting the roof, they were regarded as mere substitutes for stonework. Arches of the same kind were met with at Conway Castle, the Moat House, Igtham, and the Palace of Mayfield. They found, in all these cases, it was customary to support the roof by stone arches; and in those arches there could be nothing at all of the principle of the tie. There was simply a support built up to carry the roof, but the lateral thrust had to be otherwise provided against; and on that principle the early carpenters worked. When the Mediæval builders had succeeded for some time in that way, they came to re-roof Westminster Hall, which he believed was originally divided by arches, as those at Winchester, Okeham, and Hereford. It was a noble conception to throw a grand arch of timber across the vast span of Westminster Hall; and no doubt it was done in imitation of the examples he had enumerated. The arch here formed in timber supported the entire roof; and, by a very curious and nice system of equilibriation, the weight of the upper part was thrown as much within as without the line of the massive rib. That system of equilibriation, and building up, pervaded the whole system of Mediæval construction in wood-work. When, therefore, they did without an arch, and used a beam, they used it in the same way as a breastsummer, or floor-girder. There was nothing in the nature of a tensile strain. They laid the beam from wall to wall, and set a king-post in the middle, if necessary; but not to prevent the sagging of the beam, or to strengthen it. At one of the Italian churches he had spoken of, conscious that the so-called tie-beam would sag in the middle, the builders strengthened that part with a large additional thickness of timber; and there was nothing, that he was aware of, in the way of tensile strain, thrown into any roof until the 15th Century. He rather thought the roof of St. Paul's, at Rome, probably reconstructed in that age, would be found to be one of the earliest instances in which a tensile strain was discoverable at all in a roof.

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* The **President** subsequently remarked that he could never satisfactorily discover upon what statical principle the hammer-beam roof was constructed; but he supposed it depended mainly upon the equilibriation of the parts, and he hoped some one would take up and work out the subject.—Mr. **Street** said he thought their stability depended mainly upon the mode in which the timbers were tied together at their junctures.

Mr. JOHN P. SEDDON, Hon. Sec., said, with regard to the description of roof as at Salisbury Cathedral, there was evidently a considerable element of weakness proved in that instance by the supplementary posts that had been added, not, in his opinion, in the most skilful manner. He had noticed himself that when the similar couples of the roof of Llandaff Cathedral were being raised, until connected with the rest, they were hardly able to support their own weight; but, by inserting iron ties from the apex to the point of the junction of the braces, their rigidity was increased to a remarkable extent, and such appeared to be a better method of remedying the inherent weakness of the construction than that adopted at Salisbury. There was one point very desirable to be considered, and that was, how far these principles, which were admirable as carried out in the Mediæval works executed in oak, were to be translated into the modern material of fir timber? He apprehended it should be with timbers of still larger scantling, and an entirely different system of framing and uniting the several pieces, assisted by wrought iron, in the shape of straps and bolts, &c.: whereas too frequently Mediæval precedents were now copied in far slighter scantlings, although in so much weaker a material.

Mr. C. F. HAYWARD, Hon. Sec., stated that he had received information from Mr. R. M. Phipson, of Norwich, Fellow, that, over the stone vaulting of the choir of Norwich Cathedral (Bishop Goldwell's work, in Henry the Seventh's reign) there existed a very fine early oak moulded roof, evidently put up with the intention of being left open, and not, as now, hid from view by stone vaulting.

Mr. MORRIS stated that the roof of King's College Chapel, Cambridge, was moulded, and seemed to have been used for some time before the groining was set up, and there were evidences, that as the masons went up with their work, they cut the posts off to make room for the stone wall.

Mr. T. M. RICKMAN, Associate, considered that one great beauty of the English Mediæval buildings consisted in their wonderful variety and the remarkable adaptation of the materials of the several districts to the purposes of construction, and by such study on the spot as Mr. Street had recommended, the habits of the Mediæval artificers would be best ascertained and understood. The subject treated of in this paper was one specially interesting to English architects. Wood-work in England was more varied, perhaps, in the purposes to which it was applied than that of any other country. In the north of France they seldom found wood-work comparable to the average met with in this country. Stone was probably more accessible there; and, moreover, England had ever been a timber-using country, accustomed to it in the building of ships, and especially in the use of the bow and arrow. He had sometimes fancied that the use of the bow and arrow had suggested the original idea upon which the construction of roofs depended, and the modern translation of that idea was seen in the use of bow-string girders in wrought iron construction; but there was this difference—that the bow and the string changed places with each other. The string now was the base—the straight line which tied the two ends of the beam together; the bow itself was curved, and was carried by the string; whereas in the ancient roofs he believed the idea was that the piece of timber they laid across was the bow (and he believed it was usually subject to compression); while the only idea they had of the original rafter was that of a tie at the end of the tie-beam and the top of the king-post, which represented the arrow when drawn. In later work the timber for tie-beams was selected higher at the middle than it was at the ends; but the use of the crooked timber was a thing which they had little opportunity in the present day of bringing into play. The old knees cut out of oak timber were seldom now used, but iron work was employed instead. No doubt also in aisle roofs and minor parts very out of the way pieces of timber were used, in forms that would be considered anything but shapely at the present time, but having that amount of curve which they considered necessary for the purpose. In many modern roofs, where timber was used apparently curved, the curve was far too great, and it was not such a curve as could naturally be got out of the timber. The old carpenters used such timber as came to hand curved, crooked or straight, but with an eye to the picturesque as well as the useful. Referring to other uses of timber to which Mr. Street had alluded, the grand stall-work found in many of the cathedrals were all instances where timber was used with a different view from that in which it was used in roofs. The oak timber, as used by the old carpenters for such work, he believed would be found to have been carefully selected. The great distinction which occurred between modern joiner's work and ancient was this,—the modern joiners never show anything except with the side view of the grain of the wood: they never show the cross section, and would rather cover such with veneer: he believed the idea was, that the wet got into the end grain of the wood and not into the flat face. Besides that, the face of the wood was considered to possess the greatest beauty, in favour of which certainly a great deal was to be said, and if they wished to show careful manipulation of woods they must do it so as to show the greatest amount of their natural beauties. But the Gothic view of joinery was, that whatever was visible should exhibit its construction. One must see that the thing had been put together in an intelligible fashion, and in such a way as not to require any unnatural manipulation before it got into its present shape. The dove-tail joint was never found in old joinery. Another peculiarity of their design in the finest stall-work, at all events in later times, would be found in this, that all the material, with but little exception, had been cut out of wood of very small thickness. Only out of inch stuff a great part of the finest stall-work, as that at Chester Cathedral, for instance, was constructed; the canopies, traceries and crockets had all been put together out of the same stuff, or something like it. Throughout the whole of this country the old churches possessed many valuable specimens of ancient joinery as well as of ancient roofing; and in all they would find common sense in the construction of ancient work most clearly exhibited.

Mr. WILLIAM WHITE, Fellow, said, in reference to what had been stated, that the tie beam was not introduced so much to resist thrust as to support the king post, which again supported the braces and collars, he thought it would be found that the tie beam, by standing upon a very firm and massive wall plate, was chiefly for the purpose of tying the *walls* together; and this was a common system in early roofs. That plate received the rafters, (or, as often was the case, the trussed feet of the rafters,) and by this tie to the walls, counteracted to a great extent the lateral thrust of the rafters themselves. He thought it was forgotten at the moment, that the difference was between the tie and the truss. The old tie beam was not for construction of a truss but only, as he said, for tying the walls together; and it was cambered in order to counteract the sagging, which in modern roofs was prevented by slinging it up by king or queen posts. Again, with reference to the roofs consisting wholly of rafters connected together, so universal in the Western counties, he thought they were rarely introduced without tie beams till the fourteenth century, and that in the earlier roofs in which that construction was found, they would often find signs of the tie beams having been cut away if they looked for them. With reference to the remark about cutting away the tie beams of the roof of King's College chapel, he had understood that above one of the vaults in the Exeter cathedral, the roof was first of all constructed with tie beams, which were cut away after the work had got consolidated. This might be regarded as evidence that that was the simplest and easiest way of building up a hammer beam construction, and it gave solid support as standing for scaffolding. He could not quite come to the conclusion which Mr. Street had arrived at, with reference to the design of the timber work in the different parts of the country being so very different, that it was an evidence of our ancient churches not having been carried out, (as many supposed,) by a body of masons and others, who went about to execute the work from one part of the country to another. He thought, indeed, that on the contrary this fact added to the evidence even yet the more strongly of the masonry having been carried out in that manner, for that the body of masons who went about, having naturally more to do with the masonry than with the carpentry, set out their own work, and then often gave only *general* directions to the carpenters as to their actual requirements. Thus the local carpenters, accustomed to their own processes of construction in their own locality, naturally exhibited all the local peculiarities attributed to them. He had now only to say in reference to what the last speaker had mentioned, as to the advantages of going about with the knapsack, he had personally experienced them and he had had the pleasure, and he might add the privilege, of carrying his knapsack in company with Mr. Street himself to visit some of those works which he had brought before them. He wished to carry out the suggestion to a practical conclusion in this way: he possessed a work which he had for some months contemplated sending to the Institute, which he would now do. He referred to "Grose's Antiquities," in 12 volumes, complete, but without the armour. The plates were poor, but they were enough to inform the student what was worth going to see. But it was a work which gave a comprehensive view of all the most valuable antiquities of England of the middle ages, and would enable such foot travellers to know some good directions at least towards which to bend their steps.

Mr. E. B. LAMB, Fellow, called attention to a curious specimen of arched timber construction, an example of which he did not see amongst the interesting sketches on the wall. He exhibited a drawing, showing a transverse section through Nurstead Court,* a very interesting building of the 14th Century, the measurements for which were taken nearly forty years ago. A curious point was, that the columns were diminished, of which, he believed, there were very few examples. The building was originally divided into nave and aisles; but unfortunately it was now entirely swept away, having fallen only about a fortnight after he had visited it, in the year 1825 or '26. Mr. Street had spoken about the use of pins in wood construction. Ancient builders trusted very much to wood pins; but it is a well known fact that a number of roofs have failed in consequence of their breaking or decaying; but not so much from the latter cause as from the injudicious and inefficient way they have been used, and from the timbers being frequently placed in the wrong positions. A curious instance of this occurred some three years ago in the main roof of Chequers Court, a building of the period of Henry VII. and VIII. The tie-beam, 13 in. square, had rotted entirely through one portion of it, in consequence of the failure of the pins—at least, he was not aware of any other cause. At the time he made this discovery, he was sitting in the drawing-room, over which is a long gallery, *in the roof.* He noticed a large crack in the drawing-room ceiling; and, upon a further examination the following morning, he found this huge timber entirely rotted through, unconnected with anything but the wall plates, and only held up by the nipping of the joists which were framed into it, and which ought to have been supported by it. Upon discovering this very dangerous position of beam and other timbers of the roof and floor, he immediately had shores placed under the beam, and ultimately drew it to its original position, from which it had sunk at least 4 in. This was done to two of the other trusses, without removing any of the rafters or slates. Speaking of the roofs of that period, the one just mentioned was a common form of construction. It is 22 ft. between the walls; the trusses, if they may be so called, are about 9 ft. apart; the tie-beam is 12½ in. by 13 in.; principal rafters and purlines are 9 in. by 8 in.; collars and struts, 9 in. by 5 in.; common rafters, 7 in. by 3 in.; all the timbers are of oak, are morticed, tenanted, and pinned together, with seldom more than 2 pins, about 1¼ in. diameter, to each joint. The very large scantling of the tie-beam, the very much smaller scantling of the principal rafters, the still reduced section of the collar and queens, and the scanty supply of pins, make up the common mode of construction of the roofs of most ancient village churches and barns, in which much of their security depended upon the rigidity of the tie-beams and strength of the pins: so that, in his own opinion, the ancient mode of construction is not wholly to be depended upon.*

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* A perspective view of the interior is given in Hudson Turner's work.

Mr. J. P. **Seddon** said it would be very desirable that members who possessed drawings of old and curious roofs should give copies of them to the Institute. A collection could be formed with very little trouble, and would be very valuable, as these constructions were passing away from them very rapidly.

Mr. W. **Burges**, Fellow, said it struck him forcibly that, though old roofs were very ingenious and curious in an antiquarian point of view, yet it was to be borne in mind that, in the present day, they did not use oak for roofs, but fir, and their construction must be varied accordingly. The construction, in regard to the two kinds of timber, was entirely different: if fir be employed, very large timbers must be used, if they were to be tenoned and morticed, or they must connect the roof together with iron. Perhaps the best way was to imitate the internally boarded roofs of the 13th Century, only using the fir timber. The buildings of Norway were not yet worked out, and he would suggest the desirability of offering a premium or medal for a good essay on the construction of wooden buildings in that country.

Mr. **Raphael Brandon**, Fellow, said, with regard to what had just fallen from Mr. Burges, he himself could not see any reason for substituting inferior materials for oak, which could be obtained now as well as at any other time, and the additional cost would be justified by the result. He did not know whether Mr. White meant to say that the hammer-beam was a modification of the tie-beam; but the fact was, it was entirely distinct in principle, and did not owe its origin to the tie-beam. His own opinion was, the roofs were not so much tied together as compacted, or built up, so as to form a centering which would resist thrust altogether.

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* The **President** requested Mr. Lamb to favour the Institute with a tracing of the drawing of Nurstead Court; and he hoped further that Mr. Street would allow more of his valuable sketches to be published in the Transactions.—Mr. **Lamb** said he should be happy to do so, and to accompany it with other details upon the subject.

Mr. G. E. Street, V.P., in reply, said he had little to add to what he had given in his paper. Mr. Morris seemed to him rather to invert his chronology with regard to stone arches under roofs, for they were not found in the earliest works. There were none, as far as he knew, before the 14th Century. With regard to the hammer-beam roof having arisen from cutting away the ties, he thought it improbable. He did not agree, either, with the doctrine of Mr. Burges; but the right nail had been hit, he thought, by Mr. Brandon. It seemed to him that, as they could find money enough to throw away upon ornament, if some of it were spent on construction instead, they might occasionally put up roofs of oak. Buildings were now suffering from a surfeit of carving—a complete irruption over the whole face of their walls—and if some of the money spent in this way were expended in using oak instead of fir, it would be very satisfactory. As regarded the propriety of adopting fir roofs in the place of oak, upon the old models, he observed that it was quite possible to use iron ties, bolts, &c., with fir roofs, though they could not with oak; and there was no reason why they should not do so, in order to make solid and sound construction. If, by such means, they could make a fir roof stand for ages, they would be foolish not to do it. The object of his paper was to impress upon members that they had numerous examples in this country, not only of wood-work, but of really good early wood-work. He wanted them to study those works, which was much better than hearing them described in a paper, or reading of them. Going about the country, they would find many more examples than those he had laid before them, which were a small portion only of what he had in his sketch-books. He should be very happy to give any further drawings which the Council thought it desirable to publish; but he hardly thought it advisable to add more than a series of diagrams of roofs, showing the way in which their design was developed. Mr. Burges had recommended flat wooden ceilings, and he had himself called attention to them in his paper; but they would find, that nineteen out of twenty, or perhaps ninety-nine out of a hundred, of the old buildings in England had not flat ceilings, but open roofs. Mr. White had said he had often found places where they had cut away the old tie-beam. Now and then such instances occurred; but, as often as not, such alterations were the work of churchwardens, and he did not think they had generally been removed so carefully that one could not see the traces of them. Referring to what he had said on the question of church and other furniture, he wished some one would take that subject up more closely than he had done in his paper. They would be able to gather from illuminated MSS., as well as from actual remains, the mode of construction and design common in the middle ages. It was true that Mr. Pugin had done a good deal in that way, but his designs were very Puginesque in their character; as, perhaps, it was best they should be, for every one ought to show individuality in his works. He begged to thank the members for the patience with which they had listened to his very long paper.

The meeting then adjourned.

FIRE-PROOF MATERIALS AND CONSTRUCTION.

By T. Hayter Lewis, F.S.A., Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, April 3rd, 1865.

It is now eleven years since this subject was brought before the notice of the Institute in a distinct form. Since that time fires of enormous extent have occurred in London and elsewhere, and the loss of life and property has been immense; for with the extraordinary increase of trade and wealth, there have, day by day, arisen larger dwellings, larger workshops, larger buildings of all kinds wherein goods may be made, or stored, or sold. New kinds of building, too, have been introduced, and the Acts of Parliament controlling structures have been strained to the utmost to allow of works which never were contemplated when these Acts were framed. The magistrates in London have allowed warehouses (liable to be stored with the most inflammable goods) to be erected, from some doubtful wording of the Act, of an unlimited capacity; and the Metropolitan Board of Works allow of timber structures (such for instance as the new coal stores) being raised, closely surrounded by factories and dwelling-houses, in the most populous parts of the town. It wants but little knowledge of what is passing around us to know that circumstances, easy to imagine, may occur which may obliterate the memory of the worst of the conflagrations which we have known of late.

I shall have, I am afraid, in this paper but little of novelty to tell. I can speak of no grand discovery—no dazzling invention—but the destructive fires which have occurred since the time at which the last discussion here took place, have tested to the utmost the strength of materials and the merits of construction; and I thought, therefore, that it might be well to review what had passed in the time—to see how much we had learnt, and record wherein we had failed, and as I am professionally concerned for the Committee of the London Fire Brigade, and have been concerned in the reinstatement of considerably more than one thousand cases of damage by fire, I thought that I might venture, with some slight justification, to bring the subject forward again. As there exists, to my knowledge at least, no complete treatise thereon, I have thought it better to give—

1st.—A short sketch of what has been already said upon it.

2nd.—To show the effects of heat, at various degrees, upon different materials.

3rd.—To investigate some instances of failure or success in the various methods suggested for fire-proofing, and

4th.—To offer a few general remarks as to the result.

And here I must at once premise by saying that I am well aware that much that I am about to say is quite well known to the members here; but it is *not* known or appreciated by the general public; and it may be useful for us all to have a statement, backed with the weight of the Institute (as I trust it will be by the discussion), on which we may rely as an authority.

1st.—the first paper to which I shall allude (and I shall make all the allusions very short) is the report of a Committee of Architects (which seems a sort of foreshadowing of this Institute), comprising the familiar names of Sir W. Chambers, Mr. Cockerell, Mr. Hardwick, Sir John Soane, Mr. Wyatt, and others, who made very careful investigations into and experiments upon the inventions of Mr. Hartley, Mr. Wood, and Lord Stanhope. The date is 1793. Their report amounts to this, viz., that the best protection to a building is the use of sound plastering and thick pugging, and the stoppage of draughts. They also refer to a plan, partly successful, of Mr. Wood's for preserving wood from fire, by some outward application. The report refers only to dwelling-houses; but so far as it goes, better advice could not be given

Next there comes, with a great gap in point of time, a pamphlet published by Mr. Beaumont in 1835, and called "Some Hints on the Means of preventing Damage by Fire." He gives some good examples of the manner in which fires are often occasioned; but the means for preventing it are not very decidedly shown, as Mr. Beaumont evidently doubts the efficacy of all methods then known. In 1836 we have "Loudon's Encyclopædia," advising brick arches on iron girders, but also giving the good advice to fill in floors and steps of stairs, so as to make them solid—advice not to be forgotten. In 1837, I find that experiments were made upon a house at Clapham, thought to have been made fire-proof by covering the doorposts and other upright timbers with a coating of a peculiar plaster, and forming the ceilings of the same materials on laths. The experiment seems to have succeeded, but the house was a small one of six rooms only, and I have little doubt that ordinary plastering, used in the same way, would have answered equally well. In 1848 appeared a very clever paper by Mr. Holme of Liverpool, who had had great experience in building warehouses, and he distinctly advises the use of iron as being absolutely safe, with the single exception of its application in tie rods, as to which he expresses some doubts. In 1848 also Mr. Hosking published his well known "Guide to the Proper Regulation of Buildings in Town," advocating the use of solid partitions and of thick plastering to the ceilings on the French plan. He is very earnest in deprecating the use of cast iron columns and girders. In 1853 two short treatises were published by Mr. Wyatt Papworth, on the causes of fires and on spontaneous combustion; and I need scarcely say to those who know that gentleman, that those treatises contained a great deal of interesting matter, put forth in a very modest, unassuming way. In 1854 a paper was read at this Institute by Mr. G. R. Burnell, and another by Mr. H. H. Burnell, on the system of flooring adopted in France, and this led to an interesting discussion on it, and on the Fox and Barrett system of iron joists filled in with concrete, as used with us. The discussion lasted for four evenings. In 1858 appeared Mr. Fairbairn's celebrated treatise on the application of iron to building purposes, in which he distinctly advocates the use of brick arches on iron girders tied together with iron rods, and supported by iron columns. Further, in the Dictionary of the Architectural Publication Society, under the heads of fire-proof and flammability, are some excellent hints on the subject, initialled by well known members of this Institute.

I now come to several papers written by the late Mr. Braidwood and his successor Captain Shaw; and I have purposely left these until the last, because we must remember that they look upon our subject with a totally different eye from that with which it is viewed by others. With us, it is a mere matter of professional interest; whereas, with them fire is an enemy against which they have to battle nightly at no small risk. Braidwood and his son both died in harness, and his able and daring successor, Captain Shaw, has escaped, almost by a miracle, sharing the same fate; so that we must consider the opinions of these gentlemen attentively, as being the result of experience much greater, and of feelings much deeper than our own.

I may sum up these opinions briefly thus:—That iron is unsafe, owing to the risk of fracture and to the loss of strength attendant upon great heat. That the use, so common now, of brick arches upon iron girders will not render a building fire-proof; and the only safe method of building for such a purpose is to use brick arches, supported on brick piers. But that, after all, the size of the buildings is the great thing to be considered, and that none could be considered as fire-proof unless built with much smaller divisions than is now commonly done. Further, that stone and other substances known to be incombustible, are not therefore, fire-proof; but that, on the contrary, their use, as they are commonly applied, is often the source of great danger. In the discussions at the Civil Engineer's Institute and the Society of Arts, which followed the reading of Mr. Braidwood's paper, many gentlemen of eminence, both architects and engineers, took part—amongst them, Messrs. W. Fairbairn, Hosking, E. Hodgkinson, Marrable, and J. W. Papworth; but nothing was brought forward, so far as I can see, to invalidate the above arguments. I think that I have given a fair, though very condensed, abstract of what has been said and written on the subject, and you will admit that the opinions there given are not those generally entertained by the public.

I must ask you now to consider in detail the effects of heat upon various substances at different temperatures. At the first sight, these effects would seem (as most familiar things do) to be pretty plain; but when we come to investigate them, we soon find, as usual, plenty of food for study, and many a difficulty before quite unsuspected. Take now the properties of heat in its most intense state—that mysterious form known as spheroidal heat. Most men here will no doubt remember the extreme astonishment created by M. Boutigny, when, at the meetings of the British Association at Cambridge and Ipswich, he formed solid blocks of ice, at one time, in red-hot vessels; and at another, plunged his arm in the torrent of melted iron, as it flowed at its utmost heat from the furnace. Now, the temperature of this metal must have been some 10,000° of Fahrenheit—a heat bewildering to imagine. Yet M. Boutigny bathed his arms quite unprotected in it, as I believe that any one else might do with absolute impunity. Take now at the other end of the scale, when the heat is so diminished as to be almost lost, the familiar case of water, exerting at the instant of its congelation a power sudden and great beyond conception. We may darkly guess at the cause of these phenomena, but familiar as they are to us, no one has yet brought them out quite clearly. I may, however, venture to remark with respect to the expansion, that it has often seemed to me that a force somewhat parallel to it in suddenness and fierceness is sometimes exercised at the instant of bursting into flame of very light substances. It is merely a theory of mine, to be taken for what it is worth; but unless something like it be the fact, I am quite unable to account for the sudden and great destruction sometimes caused by the bursting into flame of substances quite absurdly slight.

Between the extreme ranges of temperature to which I have alluded there are however other phenomena which are very obscure, and yet of greater importance in our present inquiry than the above extremes. Facts as to these are difficult to obtain, so I will instance some of them which have come under my notice, and which bear directly upon the subject of this paper. I will take so low a temperature to begin with as 240°, being only about two and a half times the heat of an ordinary hot bath, or only about 30° above that of water in an ordinary teakettle; a heat at which it would be difficult to persuade people that danger could arise, however long continued it might be. I tried it in this way. A friend of mine has two condensing steam-engines, worked by three boilers, one of which is always at work, with a pressure which is almost uniform at 25 lbs., the boilers blowing off at 30 lbs., giving a temperature of about 240°. I had this piece of deal cut to the shape of the steam-pipe, and secured to it close to the steam-guage, so that the heat was clearly ascertained to be as above. At the end of seven months the portion shown was blackened thus by the heat, and partly charred. At the end of six months more it was still further charred, and, as you see, the wood split, looking as if it had been exposed close to a fire. There can be no doubt that this wood is now reduced to a tinder, by so absolutely small a temperature as 30° above boiling water, and that it would inflame after some further exposure to the same low heat. I was the more particular in making this experiment with care, because I noticed that great surprise was expressed at a meeting of the Royal Institution only a short time since, when a piece of wood was produced which had been charred, owing to its being subjected for two years (I think) to the heat of a steam boiler.

I next come to a higher range of temperature, such as was used in the well-known Manchester experiments made in 1841, in the discussion whereon Mr. Fairbairn, Sir R. Smirke and other well known men took part. These experiments were made with hot water pipes, the heat ranging from 470° to about 620°. At the lower heat, gunpowder exploded. At the higher, wood shavings were ignited, and it was repeatedly noticed as a curious fact, that the heat was often greater at a distance from the furnace than near to it. The pipes were then still further heated and burst. During the discussion, Sir R. Smirke stated that he had seen water-pipes (and of course, the water in them) made red-hot, when stopped by frost or other causes; and this is by no means uncommon.

Some years since I went with Mr. Braidwood to investigate a case wherein a large factory had been set on fire on the very first night of using a hot water apparatus, the pipes of which had been taken through the floor. Yet, even now, most persons are quite incredulous of the fact that water could under any circumstances, be the cause of fire. I have had, however, lately an opportunity of trying the effects of heat, at about the temperature above-named, and quite removed from any contact with fire. It was by a hot-air apparatus belonging to some friends of mine, air being forced, by a fan, through a coil of pipes which were heated in a furnace, the air in the coil being conveyed by iron pipes underground to brass nozzles, fixed in the open air. The pipes and nozzles have been in use for many years, and are now quite uninjured, showing that the heat must be moderate in comparison with what I shall have to speak to you shortly. The exact heat of the air could not be ascertained very exactly; but, as nearly as I could judge, it was about 650° in the pipe. It evidently decreased to a great extent, at an extremely short distance from the nozzles, after being cooled by the current of external air. The experiments were tried ten feet from the furnace, at one of the nozzles, in which I first put some brown paper. In less than one minute, this burst into a flame. I then tried a strip of ordinary yellow deal, which I inserted also in the nozzle, and it burst into flame in four minutes. I need scarcely say that there was no appearance whatever of flame or anything to indicate to the eye the presence of heat.

To show as clearly as I could to the present meeting the exact increase and effect of this heated air, I had this piece of deal held at a distance of half an inch from the nozzle, and the effect of the air upon it timed at short intervals. You will see that in ten seconds the wood was slightly clouded; in twenty distinctly scorched, in one minute several portions were made quite black, and in two minutes the area was charred all over. Now these results have important bearings on our construction, as I will illustrate by one amongst a number of actual examples. I allude to that of a large public building in the north-west of England, upon which I had, two years since, to report after its almost total destruction by fire. It was about 140 by 45 feet, having ranges of offices on the lower stories, and a series of large public rooms over. The fire broke out below, and soon attained to a great heat; but the remarkable thing described to me was, that all of a sudden the solid timber roof became on fire from end to end, and was destroyed as it were in a moment. The cause was clear on my examination: the roof was not an open timber one, but ceiled flat to the tie-beam, so as to form a large close chamber. Under it, in the grand hall, were certain huge piers, looking solid enough, but being so in look only, being hollow and put up, I suppose, under some dim notion that they were ornamental. These false beauties formed excellent conduits for the heated air to pass into the equally false roof, and doubtless had conveyed a stream, almost of fire, into the mass of timber, which would thus be dried to tinder in a few minutes, and wanted a mere spark to inflame the whole, and reduce it (as actually happened) to ashes. This dangerous effect of heated air, too, will explain the manner in which fires originate in drying closets, a very large proportion of which have been destroyed, with a wonderful amount of destruction, although every precaution has been taken to prevent any actual contact with the heated surfaces.

I am the more anxious to insist upon this point, about the danger of heated air, because there is a favorite theory that currents of air may be relied upon in some cases to counteract the effects of heat, and in one of the cleverest papers published on construction, viz., that by Mr. Holme, of Liverpool, he distinctly recommends the use of hollow iron columns, with a stream of air passing up them, as being the great safeguard in their use. Mr. Fairbairn, likewise, in the discussion on Mr. Braidwood's paper, at the Institute of Civil Engineers, in 1849, insisted upon the same thing. We all know how constant is the practice of using such hollow columns, and imagine the effect of a current of air from a fire raging below at a temperature of 2000° to 3000° (no uncommon heat) sent up into the upper stories and roof. Now remember that iron becomes red hot at a heat of about 700 to 800°, so that with the present plan of seating one iron column upon another, it may very readily happen that a stream of air, quite invisible to the eye, might be rushing upward equal in fierceness to the contact of red hot iron. All the engines in London would be powerless to counteract the danger in such a case.

I have brought forward these few cases in order to show that the question of fire is not quite so simple as it at first sight may seem, and I turn now to consider the effects of heat on various building materials. I think that I may represent fairly enough the general notion of the public on the subject as amounting about to this, viz., that what is incombustible is fire-proof;—certainly it was the notion of the framers of our Metropolitan Buildings Act when they insisted on such things as stone heads to iron doors, and it is so, I think, of the public in general. I need scarcely point out here how delusive is such an idea; but people still believe that if the bressummers of their shops are of iron, if their floors are formed of iron bearers on iron pillars, and their stairs of stone, their premises so made, and themselves with them, are perfectly safe from fire.

I have selected a few examples to show how erroneous and dangerous this notion is, and how fire treats these said fire-proof things: I now take stone, its most ordinary and, perhaps, dangerous use being that of stairs. I shall speak more fully of this when I come to the question of construction, and I shall merely say in this place, that stone, marble, granite, or any such formations are utterly untrustworthy in case of fire, unless used of a thickness quite unusual in our modern works. Here is a piece of York, taken out of a recent great fire of some notoriety now, and partly changed, as you perceive, to a deepish red tint. Here, too, is a piece of granite, started into fragments by the heat;—in fact, I remember no instance in which stone or granite has resisted it whenever the temperature has been high. How firestone might serve in case of fire I cannot say, as I have had no opportunity of testing its strength and endurance on a large scale. But it was used very extensively in Mediæval times (in Westminster Abbey and the Temple Church, for instance), and I should be very glad to find that for internal work at least it would be safe. For external work I am afraid we cannot hope that it would be. I must mention that although stone is thus acted upon when in thin slabs, and where the fire can thus play round it, I do not remember any case of the failure of a building from the use of stone columns or piers of tolerable size; the fire scales off the outside in large flakes, but generally leaves a solid core. My remarks extend solely to the use of stone in positions wherein a large portion of their surfaces are exposed. It is of consequence to notice the above defects, because the practice is very common of supporting floors on light stone corbels, with a view of saving the walls by preventing the entrance of timber into them; and it is quite certain that the risk of whole floors coming down suddenly from this cause, when the bearings are on stone corbels only, is very great. This is no imaginary fear. Cases of whole floors coming down in this way have happened a score of times in Captain Shaw's experience, and in several cases have placed the lives of himself and men in imminent peril. Before leaving this part of the subject, I may mention that thin slabs of marble and stone are often warped and curled by heat in a most curious way, like wood.

The next substance that I have to notice is brick; and I may say at once that I know of no case in which good bricks have been destroyed by fire. I have known cases in which the surface has been exfoliated to the depth of an inch or so, and several cases where a long continued heat, of great intensity, has vitrified it, but never more. This is, in fact, just what we might expect from its process of manufacture.

And now I come to the use of iron and of the metals generally. As to the softer ones, such as lead and zinc, they are, of course, fit only for covering, and do not, therefore, enter much into my subject. But in thinking of them for roofing we must remember that zinc melts at a low heat (700°), and then burns fiercely. Lead melts at a somewhat lower temperature (594°). Iron, however, is a great aid now in construction, and its almost universal use suggests the need of most careful research with respect to it Now undoubtedly it is relied upon by the public as being a safeguard against fire. Undoubtedly, too, its use is looked upon by the insurance offices as being more dangerous than that of wood. Its first and most obvious defect is its rapidly deteriorating strength when heated, and though the fact is well known, it is curious that experiments vary very much indeed as to the measure of deterioration. All agree in the fact that at and above red heat (which is common enough in fires) the diminution in strength is great; but below that opinions differ much. Mr. Braidwood's opinion was that iron begins to lose its strength even at such low temperature as 100° and upwards. Mr. Hodgkinson thought that the strength was only slightly diminished at any temperature under 600° (the melting point of cast iron being 2786°), and was not very much so until red hot, and the experiments made by him and Mr. Fairbairn are by no means clear in their results. It is highly important that the exact facts should be ascertained, because, of course, a low temperature is more common than a high one. My own opinion, from careful observation after every case of consequence, is that wrought iron is very sensibly weakened, and cast iron rendered brittle at comparatively low heats. Because it is very common to find iron ties and other similar work bent merely by their own weight in small buildings and other places where the heat has, clearly, from other evidence not been great. The failure of the wrought iron girders also drawn from examples at a recent fire, shown on the drawings, tend to the same conclusion, for the whole of them were bent, twisted or broken in the most violent way, although the cast iron columns on which they rested were only slightly bent. These columns were, however, of much stronger form than is usually found. Anyhow it is quite certain that at higher temperatures, such as are to be expected in a large fire, iron rapidly loses strength, and thus a floor or a beam which would bear the weight upon it quite safely at an ordinary temperature, might break down at a higher one. But I come now to consider of the greater heats constantly produced in our larger fires, and where iron and brass are actually melted. Here are specimens of both taken from a recent fire, and quite fused. The temperature here must have been about 3000°, and the metals retained no strength whatever to sustain even their own weight. Now there can be no doubt that iron offers us most admirable aid with our columns and girders, when used as metals should be; and now that we are getting out of the way of imitating stonework in iron, and that we are using and ornamenting iron as a definite material, undisguised, it is likely to influence, and ought to influence most materially our designs; and when we call to mind the extraordinary differences produced in its qualities by such comparatively trifling differences in treatment as those which produce cast iron, wrought iron and steel, annealed and case-hardened iron, we may not be without hope that means may be found of removing the defects which now militate so seriously against its use. Meanwhile we must look upon it as being a most dangerous ally.

I next come to wood. And I must certainly ask you, at the outset, to regard it as not quite so dangerous a material as is supposed. For instance, that drawing shows some posts and a girder which remained, as you see them, to the end of the fire which melted the iron and brass within ten or twelve feet of them. Here, too, is a piece of another post from the same building, and close to the same part of it, where the wood is burnt in to some little distance, and scorched deeply in, yet still retains its strength. Several others remained in the same state, and I may say that, in general, in ordinary fires, large timbers are seldom burnt right through, but have enough of their substance left to act as struts or girders, though, of course, much weakened. Doubtless, in the case of such extreme heat as the above, there was some current of air which carried the flames away from the wood; but none of the firemen present could say how.

I come next to *concrete.* This is much used for fire-proof floors, and likely to be for many other purposes, as bricks are now getting so very dear. We know well from the examples of old walling, how valuable a material this is, as we have all seen it remaining quite sound after being used for the hearting of a wall, after its Roman or Mediæval casing has been destroyed for ages. But, so far as my present purpose is concerned, we must accept its use with some reservation. The whole question was entered into very fully by Mr. Tite and others at the Institute in the discussion on Mr. Burnell's paper, and his opinion was that ordinary concrete was not to be trusted. Clearly flint work is unsafe, as the flint is calcined so much by fire, that walls made of them are shattered to pieces by it. So are the ordinary gravel pebbles, of which here are some specimens. But concrete may be made of broken bricks, as the old Romans made it, and as, I think, Mr. Tite has used it in several cases. Here is a specimen of it from a late fire. This, too, is the base of the Nottingham concrete, as made by Mr. Dennett. I have a high opinion of concrete in fire-proofing, but there have been, nevertheless, cases of some suspicion as to the perfect protection to be derived from its use. I do not allude in this to Mr. Dennett's, as I have no experience of its use in case of fire.

The last substance to which I shall allude in detail is ordinary plaster—perhaps the most valuable auxiliary that we have—as might be expected from its non-conducting properties, proved clearly in the very elaborate experiments made on this subject by Mr. Hutchinson. He tried most building materials carefully, and shewed that a combination of lime, sand, plaster of Paris, &c. had less conducting power than any of the others.

I must now ask you to consider the combination of these several materials in different forms of construction, and the subject will naturally come under the divisions of walls, piers, columns, or other detached supports, floors, stairs, and roofs. The walls are, of course, the most important, but the least difficult in execution, as brick is, at once, the best and most common material for inside work at least. In fact it is, I think, an almost unexampled case for a fire to destroy an ordinary thick wall, as the flames naturally ascend, directing their force on the ceilings, through which they usually find vent; and I have seen fires of great strength stopped even by thin partitions. I saw one case, in the old town of Hamburgh, where a large warehouse was destroyed, but where the fire had not injured the adjoining warehouse, although separated from it by brick nogging only. Sometimes, however, there is such a stop to the flames from a stubborn ceiling or arch as to allow them no decided vent, and then the walls are exposed to the full action of the fire. Yet even then I have never known good brick walls to fail by being burnt in. There was a great proof of their strength in the case of the vaults of the Tooley Street warehouses, many of which were filled with oil, converted by the flames into a rolling sea of fire, which burnt for weeks. These vaults were built in the usual way of good groined arches, supported on brick piers, and not an arch nor a pier broke down under the trial, nor, after a recent examination of those that still remain, could I see that even a joint had given way. But every portion of the stores over, many of which were built of iron girders on iron columns, presented such a scene of utter ruin that one could scarcely dream of. No one who had ever seen it would place faith again in iron. The greatest damage is to be feared in time of winter, and when the fire is over; then, if one side of a wall has been saturated with water, and the other not so, the water in the open joints freezes, expands, lifts the brickwork on the one side, and bends the wall. I must qualify this opinion as to the sufficiency of brick walls by saying that the brickwork must be well done; for I have seen cases in which the work was filled in so badly, that smoke poured through the wall at every joint; there was, of course, but little safety there. I, of course, suppose also that the walls are of a fair thickness, but it would lead to too long a controversy to discuss here as to what that thickness should be. I must also qualify what I have above said, with respect to walls of hollow or pierced brick. For various reasons I much doubt the effect of fire upon them, but I have not seen them tried practically, so that I speak upon this part of my subject with hesitation.

Next to the walls come the piers and columns, and these are clearly the most important parts of the building. Their construction is often easy enough on the basement, where space is not usually so much an object; but above that story anything larger than a story post or iron columns is seldom allowed. I have already alluded to the defects of iron, and at present I know of no method of insuring safety in its use. Several means have been suggested. Mr. Hosking tried, in one very extensive warehouse, the plan of putting the columns double in two separate rings, one, in fact, enclosed within the other, his idea being that, if one were to break or bend, the other would safely bear the weight. I certainly doubt this much, and in any case the expense is very great, and the size of the columns very much enlarged.

I myself once tried the somewhat contradictory plan of encasing the iron columns with a thick layer of plaster. There is no great difficulty in getting the plaster firmly to adhere, and I think that the plan would be a safer one than that of the double columns. But I am not over sanguine about it, and the system is, at least, liable to the artistic objection, that it conceals the more valuable material of the two. I have already alluded to the plan of sending air through the columns, but there is another plan which has found favour with many, and which provides for filling the columns and the girders with water. This at first sight seems plausible enough; but the least thought shows numerous objections. There is, first, the risk of the water freezing, and so bursting the iron—or of the latter's expanding, and so letting the water leak at the joints. There must be risk of this, even with ordinary changes of temperature, subject, as these floors must be, to heavy pressure, and still more so in case of fire, when every circumstance is intensified to an extraordinary degree. We must, too, then find the hollows either open to the cistern head or closed securely; if open, the intense heat will convert the water into steam, and blow it out; and if closed, the heat will convert the hollow spaces into so many boilers, charged with steam at a high pressure, without escape valves, and tear the whole to pieces. I have here a sketch shewing how such a thing actually happened a few months since. It shews the head of an hydraulic apparatus at a coal store which (like many others of its class) was burnt down. By accident all the pipes leading to it were shut off, and the head filled with water. The result was, that the screws by which the pipes were connected with it were forced out, tearing with them pieces of the solid iron, and the head itself, made of good sound cast iron, an inch thick, was burst open, as shown, from top to bottom.

But the whole question of supports is so intimately connected with that of the floors which they carry, that I shall go into the latter question at once. Now I will first take the case of private houses, where there is usually nothing but the ordinary furniture to burn beyond the constructive parts; I assume, of course, that such precautions have been taken as to make the skirtings and partitions solid, because if drafts are allowed through and behind these, the fire will soon be led through them in spite of every effort. But such precautions having been taken, I see no great difficulty in protecting the house. You may do it as the French do, by iron joists, &c., or in the way used here, and known as Fox and Barrett's plan, or by any way by which the spaces between the iron may safely be filled in with good plaster or other concrete; and doubtless, with long bearings, iron must be used in some way, nor is its use objectionable where such low temperatures only are to be looked for, and when protected by a plastered ceiling. But, in addition to the cost of the iron, it is a material always troublesome to use: one wants to trim a floor or bevil off a headway and so on—things done easily enough in wood, but often very difficult or costly with iron; and I really do not see that it possesses any advantage over wood, when the latter is equally protected by plaster and concrete with the iron.

This protection may be had in several ways. We may adopt the ordinary French plan, as described by Mr. Hosking, viz., of having very strong laths, filling in the ceiling from above on to a temporary scaffolding, (instead of pressing it upwards, as with us,) and filling in the whole space between the joists with rubble, so as to form a solid flooring. But this plan has the disadvantage, that the whole weight of the ceiling is carried by the nails of the lathing, and any carelessness or want of skill (not unlikely to be experienced in the use of a method new to our workmen) may produce fatal results. With iron joists the laths rest on the flanges, and iron has thus so far an advantage over wood. But I feel quite satisfied that strong, thick pugging would be almost equally efficacious if the sound boards be split in narrow widths, and the soffite plastered so as to form one mass with the pugging over, thus leaving but a very small part of the bottom of the joists exposed. This would be still further protected by the key of the plaster ceiling, if the sound boarding could be brought so low as that the key of the plaster ceiling would unite with that of the pugging. The difficulty in the way is that the fillets must then be brought so low (close to the soffite of the joists) as to render the latter liable to be split and weakened by the fillet nails. An ingenious plan of obviating this was used by Mr. Marrable at the Board of Works offices in Spring Gardens, viz., cutting the joists in a wedge form (two out of one so as not to waste the timber), so that the concrete filling in used there had, when dry, all the properties of an arch, and pressed against the joists as its abutment instead of bearing with its full weight upon the fillets. The floor over being tongued, the draught will be stopped, I fully believe, almost as well as by Hartley's plates. I have recently seen a case of a fire in a warehouse, where the heat was so severe that the wrought iron doors were bent so as to be useless, and yet the wooden-tongued floor had completely prevented the flames from spreading downwards.

Another way of forming floors has been much used in the Midland counties, and is well known as Dennett's, being formed of concrete, to which I have already favourably alluded. The patentees claim for it greater lightness, solidity, and cheapness than four and a half inch brick arching, and I fully believe it has them. But the absence of lateral pressure is also claimed; and I cannot at all understand this. If the arch form be of any use, it can certainly only be, so far as I can see, by a pressure on the abutments. If the material itself give the strength, and the abutments are not strained, the floor may be as well laid flat. With good abutments there is much to recommend this plan, as it will, I think, be efficacious, and the arched form worked out of the actual solid, and not by plaster bracketting (as dangerous in case of fire as false in construction) is very much the thing we want, to help us to variety in the sections of our ceilings. If, however, the bearings are of iron, Dennett's plan is open to all the objections to which the iron itself is liable. There are also in the South Kensington Museum a great many full-sized models of plans for fire-proof construction, but all without, I think, exception, depend upon iron girders for their bearings or abutments, and such a condition must be fatal to their use. Of another plan, suggested by Alderman Waterlow, where the strength of the floor depends upon a system of iron rods, built into, and therefore protected by the concrete, I speak with reservation, as the system has never yet been tested by an actual fire. But in ordinary houses the heat is so comparatively slight, and the force of the flames so taken off generally by the stairs as an outlet that there seems to be little difficulty in protecting the floor, whether by this or by other methods It is in the construction of warehouses and other large places wherein large masses of combustible matter are stored that we meet with the really great difficulty, for we have to encounter there an excess of temperature unknown elsewhere. Of all the plans that have been tried for the protection of these places, I suppose that the one of brick arches carried by cast iron girders is that most commonly used. Doubtless such a floor would be of use in order to prevent fire spreading downwards. But the iron-lined ceilings as used at Nottingham and elsewhere, where the floors are inflammable, owing to the oil dropping from the machinery, or even an iron-tongued floor, where no such extra risk exists, would go far towards answering the same purpose, whilst what I have already said will show how little dependence can be placed upon the iron if the heat can only get at it. Even if the girders themselves could resist the heat and the water, the arches would at once be deprived of the tie which forms their security, by the bending of the iron tie rods. For I never remember to have seen a case in which rods, used for whatever purpose, were not found so bent after a fire as to show that their strength as ties had gone. It so happen, too, that the form of the iron girder, often adopted as being the strongest in section, viz., that of the reversed V, is really the weakest in case of fire, as the latter has free access to it in every part, whereas the only chance of a girder being saved is the smallness of its section exposed to the fire.

The system of girders or joists filled in with plaster or concrete is much better than the last, as no tie is required, and, doubtless, in small cases they may be useful. But I have seen them often tested in large fires, and I remember no instance in which they have there formed an effectual stop. (I am now, of course, speaking of warehouses or such buildings, and not private houses.) I may again bring forward the wrought-iron girders shown on the drawings as a case in point, for these formed portions of a floor which had been filled with concrete eighteen inches thick. But the ceiling had been formed of boarding only, the soffites of the girders were exposed to the direct action of the fire, and the greater part of the building destroyed. There is, however, always a difficulty in these cases, in determining whether the actual cause of the failure was the iron columns or the girders which they support. For if the columns fail, the bearings of the girders fail also, and the girders must bend or break with the heat and weight. In one remarkable case, where the columns had not been injured, the system had apparently succeeded, the fire having begun on an upper story, and failed at first to work down through the concrete floor. But, some hours after it was supposed to have been subdued, it burst out on the lower story, having apparently sent a stream of heated air through some crack in the concrete, and the whole building was then soon utterly wrecked. This building offered a curious instance in another way of the danger of iron construction. It was circular in plan, the girders radiating to the outer walls from a circular iron framing in the centre. The ironwork got heated, expanded, and so injured the walls that nearly the whole had to be rebuilt, whereas I feel quite satisfied that all would have been saved had the girders been of wood. A curious instance of the danger of iron is given in the drawing of brick arches, being a section of part of a building very much injured by fire some years since. The fire broke out on the story covered with this arched construction assumed to be fireproof. All the arches rested on cast iron girders, except the arch next to the wall, the girder adjoining which turned out to be of wood, put in either by accident, or perhaps as a piece of scamping work. Anyhow, it is the only case of the sort that I remember. The lower surface was exposed in precisely the same way, and to precisely the same extent as that of each of the iron girders. The fire was one of the fiercest that I ever remember, and burnt into the brick of the wall, directly under the wood, to a depth of nearly an inch, that having been clearly the hottest part. Yet every iron girder broke in half, throwing down the iron arches which they bore, whilst the wooden one remained to the last, with no more injury than its being turned into charcoal for an inch or so in depth. But I must ask you to consider this question as to wood a little further.

If we examine how buildings built of wood give way, we shall find that, as a general rule, they are constructed with long girders of fir, supported on posts or columns, also of fir, connected together only by the thin joists which carry the deal flooring. These latter, unprotected by ceilings, and seldom even by tonguing, are burnt rapidly away, the heavy timbers thus left without connections to steady them, sway over with their weight, fall into the burning ruins, and add to the fire. Now, if these heavy timbers and posts were of the hard wood which was used of old, and if the space between the joists were filled in solidly with such a material as the pugging which Lord Stanhope used, we should have a flooring of much greater value in time of fire than any I know, short of real arches on real brick piers. I don't say that it will be depended upon to stop a fire if once it got a-head. Nothing but arches or piers will do that, unless you divide your warehouses with upright walls, so as to lessen the mass of fire; nor do I contend that there is not a great disadvantage in the use of timber from its certainty to increase the body of fire if the stairs, for instance, fairly ignite, or the floors give way. But I *do* say, that the danger from the risk of sudden failure in the iron more than counterbalances this; and that, if stairs, and floors and columns were made as I have alluded and shall allude to, they would offer such chances of delay as might be of the utmost use in preventing loss; and I know well that the men in the brigade would feel themselves secure with such construction, and fearlessly work to save it, whereas even Captain Shaw himself would hesitate to lead or the most daring of his men to follow him into a building when they knew that the lives of all within it depended upon a frame of iron.

I must offer a few words as to *roofs*. The objections that I have elsewhere offered to the use of iron do not apply here, and it is probably the best material to be used. But I must venture to give a caution that battens must be used in the covering, and not boarding, as the fire runs along the latter with great rapidity. I must also notice another practical point recently brought under my notice by Captain Shaw, and which had quite escaped me, viz. that when cisterns are provided against the risk of fire, they should be at a considerable height, as it takes a pressure of 15 feet of water to open the firemen's hose.

I now come to the last part of my subject, and perhaps the most important of any, viz. the stairs.

The example that I have selected is one of melancholy interest, as it was connected with the deaths of three persons; but the construction of the staircase was of so uncommon a character as to make it an unusually good case to which to refer. It had walls on three sides, but on the fourth only a thick quarter partition, not brick nogged, but lathed and plastered as usual. The steps were of good, sound Portland, with one end pinned well into the side of the wall, and secured into the wooden partition by strong cross pieces of wood framed with the uprights. The landings were formed of wooden joists, with plaster ceilings. The fire broke out in the basement story, and could have been of no very great intensity, as the ceiling over was not at all burnt through, and all that there was to feed the fire was the kitchen floor, fittings, and one cross partition. It passed through the door on to the stairs, swept up the stairs, was stopped by a lath and plaster ceiling at top, and rushed out by a window close under it. All the doors of the various rooms leading on to the stairs were shut, so that no damage was done to any of the rooms except by smoke and water. Now this is a good illustration of the effect of the first sudden burst of flame, for there was nothing to burn or add to the fire on the staircase, and the only heat was from the rush of flame. Yet before any of the engines began to play the staircase broke down from the top, and crashed down the whole underneath, leaving the ends projecting from the walls and wooden partitions, which latter held the stair ends as firmly as the walls did. I was, at first, quite puzzled to account for this. At length I found that a large cistern was on the upper story, full charged at the time of the fire—that a hole had been burnt through the service pipe from it, directly over the top steps, upon which, thereupon, the whole weight of cold water had come down suddenly, in their heated state. These had snapped off and broken the rest (rendered brittle by heat) in falling. I have since seen another stone staircase, of similar construction, broken down from apparently the same cause, and others would, of course, follow in the same way directly the engines played upon them. But the fact to which I wish to draw your attention more particularly is that the only parts of the whole staircase which remained secure were the wooden landings, protected only by the plaster ceilings; and that while every part of the fire-proof construction was utterly destroyed, I took my observations in complete security on these said landings, which remained to the last uninjured.

As a practical result I may, however say generally, that if the stairs be supported at each end, as they were in the old geometrical and other staircases, it matters very little what their construction may be, as they would be pretty safe any way. For you will find that the way in which a staircase of stone is destroyed, is by the fire rushing up the central well-hole, and heating the outer ends to excess. The steps thus become excessively brittle, and snap off at once whenever any sudden weight or change of temperature is brought upon them. With wooden stairs the case is different; they are seldom set fire to from underneath, as the plaster ceilings invariably protect them, unless the plastering is very bad. But the outer string, exposed to the full force of the flame, catches fire; the flame spreads thence to the riser and the tread, gets thus *behind* the plastering, and the stairs are then destroyed. The present fashion of cut string is a wonderful help to fire, as it gets at once, without a step, from the outer string to the treads and risers, and it would be no slight step towards safety if the present fashion were discarded in favour of the old massive solid strings and newels. If these were reused, and the stairs made solid with plaster, on some plan like the French, there can be no question whatever that wooden stairs would be something very nearly fire-proof. I ought to refer here to one fine example of a different construction—that of old Rochester castle—the old staircases whereof are formed of concrete, bedded on wooden templates, the marks of which remain now as perfect as the day on which they were laid; and I believe that these old stairs would resist now the trial of fire, as they have that of time and weather for some five centuries.

Before I conclude this paper I ought to say a few words as to making wood fire-proof. Many schemes have been suggested, and one was reported on favourably, though with some qualifications, by the associated architects in 1793. I am quite unaware of what the composition was, but it seems to have been applied externally. Some of the others I have tried, but I cannot say that any are quite successful. The external application of water-glass was strongly recommended at one time; but I tried it on a rather large scale after the exact directions of the patentees' agents, and was sorry to find that I could not perceive the least benefit from it. Ransome's system is certainly better. It is carried out by an external coating, put on as you would put on paint, and very clearly stands the action of the flames for some time. I cannot say that it does more than that, for it soon blisters.

Sir William Burnett's patent, too, I have tried. The patentees of this do not profess that their method preserves the wood actually attacked; but they claim the merit of preventing the flaming of the wood, so that, although when it is attacked, it must yield to the flames like other wood, yet that it has the great advantage of smouldering only, and thus of not communicating, to the neighbouring parts of the fabric, the fire by which it is itself destroyed. From what I have seen, I think that they claim no more than the facts bear out. But I must warn you that they do not assume that the ordinary process against decay will do against fire; an extra solution is required for this.

With Sylvester's patent I am not acquainted. Poplar wood has been considered as being little affected by fire, and larch is noted by Leoni as having the same property. I have tried both, but can perceive no benefit from their use.

I may then, as a general rule, in conclusion state it as my deliberate opinion, that the general use of iron in attempting to render buildings fire-proof, involves simply a waste of money and no protection whatever. That many of the plans in common use of forming floors and partitions will be sufficient to secure an ordinary dwelling-house against the risk of fire, if carried out with care; but that nothing short of diminishing the size of warehouses and other such buildings, or protecting them by brick arches and brick piers will render them secure; that the common method of brick arches on iron girders is the most dangerous one that can be used, and that oak beams and joists, with good thick plastering are infinitely more secure; that stone as now used for staircases forms little or no protection against fire; and that wooden stairs, with ordinary precaution and at very little cost, may be rendered really safe.

I have in this paper, whose technicalities have, I fear, rendered it a somewhat dry one, carefully avoided putting forward any theory of my own, but I have adhered, as strictly as I could, to a mere statement of facts supplemented with any observations which occurred to me as likely to throw light upon them; and, in order to reduce the subject to as slight a compass as possible, I have avoided entering upon many collateral subjects, very interesting in themselves, such as spontaneous combustion, gas explosion, the best means of escape, and so on.

The importance of the subject of this paper can scarcely be overrated. As artists we are deeply interested in the use and in the fitness of materials; for all, whatever our particular feelings as to our art may be, must know well that it must and ought to be strongly influenced by such choice and fitness. And as citizens, all alike are interested in the preservation of life and property now threatened, more perhaps than ever, by that terrible destroyer—Fire. None but those intimately connected with the fire offices can give even a likely guess at the loss which fire entails annually upon our property. But we may reckon up the sacrifice of life by it. So far as numbers go I have the total returns of this through the kindness of our coroner, Dr. Lankester, but he cannot get the loss through the buildings being on fire separate from that of loss from other causes. The total, however, is terrible. In England and Wales only, 3600 persons are burnt to death in each year and 36,000 injured, and even this list does not include the loss occasioned by the falling of walls and other risks attendant upon fires. Here in London (and I speak of this town only because I know it best) all that skill can do is being done in the most liberal way by the Committee of the Fire Brigade, and all that daring can effect is nightly done by Captain Shaw and his men; but with the extraordinary increasing commerce of London, the buildings and the consequent risk are frightfully increasing too, and no one who studies the question can doubt that we may, at any moment, awake to a devastation which may throw even that of Tooley Street into the shade. Mr. Braidwood told me repeatedly that if one in particular of those coal stores, to which I have alluded, were well on fire and the wind blowing strongly, every building to leeward within one hundred yards of it would be swept down by the rush of flame; and he has, moreover, often said, that if one of the large warehouses near St. Pauls were well on fire, and the wind were blowing briskly from it to the Cathedral, the dome was as likely as not to catch alight, and then no power on earth at that height could save it. We have undoubtedly now engines worked by steam and of greater power, but even now the chances would be terribly against them; and imagine the effect of the acres of lead with which St. Paul's is roofed, rushing down red-hot and flooding the streets and houses near.

In concluding I must say that I have been obliged in this paper to go over much well worn ground, and to recall facts well known almost to all, perhaps, here. But they are *not* well known or recognized abroad; and if we can get them more widely recognized and more earnestly impressed on the public through the medium of this Institute, we shall, as members of it, have helped to do no little good.

Mr. WYATT PAPWORTH, Fellow, said he rose to move, with very great pleasure, the best and warmest thanks of the meeting to Mr. Lewis for his valuable paper, which was really a communication of great practical importance. In the course of his own duties as surveyor to a Fire Assurance Office he had found much damage had been occasioned since the introduction of the low grates; the heat of the fire penetrates through the hearth stone, and sets fire to the joisting, which will be placed there by the workmen, in spite of the provisions of the Building Act, and was constantly found in very old houses in the city and elsewhere. Those who put up stoves of a similar character, standing forward into the room, should bear the following fact in mind,—that even if the floor be covered with a stone, the heat will penetrate the stone and burn the floor-boards or joists. These stoves should always have an iron pan above and clear of the stone. Many present would recollect the destruction some years since of Doncaster Church. It was said at the time that the heat acted on the stone of the edifice to a very great degree. Mr. Denison in his "Lectures on Architecture" gave the results of some experiments on sandstone and limestone by great heat, and maintained that the fire had no special effect on the stone, and that the cause of the stone facing failing was the defective state of the rubble wall behind it;

the mortar in the joints becoming destroyed by heat, the stone facing simply fell in. Those experiments he thought corroborated what Mr. Lewis had said with respect to fire not acting upon stone. He had seen cases in which plastering, so much eulogized by Mr. Lewis, had not proved a sufficient defence against fire. In some of the old houses in London, where the shops are low, gas lights are placed not more than a foot from the ceiling; even in one house where the ceiling was of cement, not plaster, the heat had gone through it, and set the joists on fire. The accident had been occasioned in a few days by the glass plate hung from the ceiling over the light to protect it from the heat of the gas having been broken and not replaced. The heat did not destroy the cement, but probably caused air cracks. It had been his purpose some time since to have looked through the many Building Acts which had been passed, to see how, and for what reasons, the chief intention of the earlier Acts had been departed from. If he recollected aright the early Building Acts were framed for the purpose of securing, as far as possible, buildings against fire; while some of the latest enactments had been Building Acts simply. If the authorities concerned in the matter would request the Surveyors of the several Fire Offices to draw up a "Building Act," he thought a more desirable one, for the purposes of the Metropolis at least, would be prepared than that which now existed. [A MEMBER: You would get no insurances then.] The only other observation he would make was with respect to the steam fire engines lately introduced. He thought if the authorities of the fire brigade would in cases of fires at dwelling houses interdict the use of those powerful engines, the offices, and sometimes the occupants, would be very much obliged to them; for the body of water supplied by those engines was so great that as much damage to property was sometimes done by the water as by the fire itself.

Mr. C. H. HOWELL, Fellow, would offer one or two observations, suggested by his experience in connection with Fire Assurance Offices. With regard to the effect of fire on large blocks of stone, he would say that he had seen blocks of granite of large size considerably affected by heat. In the case of the burning of a barn in Jersey, where granite is not unfrequently used for lentils, door jambs, &c., where we should use timber, he had observed that large blocks of that stone were split by the fire. Referring to the plan of charging iron beams and columns with water, for the purpose of protecting the metal from the action of fire, he feared that but little reliance could be placed on any scheme of that kind. At a fire that occurred a few years since near Liverpool, an enormous iron tank, filled with water when the fire broke out, was destroyed by the heat. The damage amounted to nearly £500, and it was the only thing on the premises which was not insured. With regard to flints, he had seen many buildings of that material destroyed at a low temperature, the calcination of the stone having been very rapid. With respect to stone staircases in ordinary dwellings, he would say he had seen some destroyed; but for one stone staircase he had seen at least a hundred wooden ones destroyed. In a case that came under his notice a few days ago, the fire had travelled the wooden staircase from the top to bottom of the building, and the rooms in the upper storeys had to be entered by means of ladders, while they were almost uninjured by the fire. There was one point in the construction of buildings which materially affected the risk from fire—he alluded to the position of well-holes. Although Mr. Lewis had not referred to it, it was known that shafts for lifts were frequently the cause of the rapidity with which fires spread from floor to floor, and that it would be a great advantage if they could be done away with. In large blocks of warehouses he would suggest, that internal staircases should be abolished, and that access to the different floors should be obtained by means of staircases placed without the walls, in connection with external passages or balconies.

Mr. EDWARD I'ANSON, Fellow, remarked that the late Mr. Alderman Humphery had probably had as much experience as any man in fires in warehouses, and he recollected that gentleman stating that he thought the joists of a building filled in with concrete, and boards at the top formed a safe or a safer construction, in case of fire, than iron girders and brick arches, and afforded altogether a better fire-proof building. One of his large warehouses at Hayes Wharf was built of floors of alternate girders and brick arches and joists filled in with concrete. He did not agree with Mr. Papworth that the existing Building Act was framed without reference to the prevention of the spread of fire: for what they daily saw in the erection of party walls was an excellent preventive against the spread of fire to contiguous buildings. It was rare now to see a fire communicate from one house to another, as the party walls were a perfect bar to the spread of fire, and they had been the means of saving property to an enormous extent; and gentlemen present connected with fire assurance must be aware that the profits on insurances of private dwellings were enormous; they seldom heard of houses such as those in Russell Square being burnt down, and the damage done in dwelling-houses was a small fraction of that which generally occurred in warehouse properties: he therefore thought the premiums for fire assurances on private houses ought to be materially reduced. Mr. Howell had suggested that communication with the different floors of warehouses should be made by means of outside balconies. That was the case, he believed, at Symmonds' Wharf in Tooley Street. There was no internal communication between the floors, but there were balconies leading from one loop-hole door to another outside the building. After all that had been said as to fire-proof construction, the great preventive of fire consisted in reducing the cubical contents of buildings used for the stowage of merchandise. That was the intended purpose of the present Building Act, but it was ingeniously set aside in many cases, therefore the great object of those interested in preventing the spread of fires was to reduce the cubical contents of buildings, and the introduction of proper party walls, and limiting the contents of buildings in that way.

Mr. HORACE JONES, Fellow, would mention one instance in which an engineer's factory was burnt down, where there was a great number of wrought iron and cast iron girders. The cast iron was broken and cracked in all ways, and the wrought iron was twisted and turned like shavings; but there were in the same building two or three heavy beams of timber, with flitches or plates of wrought L shaped iron tightly bolted on to the sides, and enclosing them nearly all round. Those girders were very little injured by the fire, and were able to bear the weights upon them. He believed that this plan of encasing wooden girders might be carried out to a considerable extent with satisfactory results.

The PRESIDENT then requested Captain Shaw, Superintendent of the London Fire Engine Establishment, to give them the benefit of his practical experience in connection with fires, on any point that might be brought forward. He was sure the meeting would have great pleasure in listening to that gentleman.

CAPTAIN SHAW, Visitor, said he had listened with great pleasure and interest to Mr. Lewis's communication on a topic to which that gentleman was well known to have paid very considerable attention, and he thought but little had been left for him to add. Several points of great importance had been brought under their notice in a very clear and forcible manner. He thought the remarks in the paper about plastering and pugging were thoroughly sound, and if architects would visit the scenes of fires, and study this branch of the subject in a practical manner, they could not fail to be convinced of the advantage of really good plastering in every case of fire. It seemed to be a bad conductor of heat as well as a preserver of that which it covered, and unless it broke or cracked they might generally rely upon all being safe inside it. Numerous instances occurred in which lath and plaster had been the means of saving large portions of a building from fire, where stone and iron failed when in close contiguity with the fire. With regard to the steps of stairs, Mr. Lewis had given some good advice in recommending that they should be made as solid as possible. He believed many heavy losses had been caused by improper construction of stairs; but could recollect many cases where wooden staircases had stood under heavy fires. With reference to Mr. Fairbairn's experiments on the application of iron in buildings, the plan was recommended of having iron girders for floors, supported by iron columns. Now, any one who visited the fires in London would find instances proving that that was not a good mode of construction; and there were many cases within his own knowledge in which it had failed. He believed that opinion would be confirmed by several practical men present, and that iron was unsafe in connection with buildings in case of fire could scarcely be denied. A striking instance had been presented by Mr. Lewis of the latest failure of iron girders, and it was curious to witness the extraordinary shapes which the iron took, showing that even in the early stages of a fire iron was very considerably affected, buckling and warping in every possible direction. One instance was afforded within a quarter of a mile of where they were assembled, of the remarkable effects of heat on iron in buildings on fire. The expansion of iron under such circumstances had hardly been sufficiently dwelt upon this evening, when they recollected that almost whole streets of houses were supported by iron breastsummers. That was particularly the case almost from end to end of Oxford Street. In case of fire the expansion of the iron breastsummer was so great as materially to affect the side walls. They had instances of the floors of buildings falling without being wholly burnt through. In many cases he had found such imperfect construction of floors, that the boards were brought scarcely to touch the skirting boards of the walls; the heat passed up where the boards did not go into the wall, and fire was thus communicated from one room to another, which would not have been the case with more perfect construction of the flooring. Again, when they poured water into the upper floors of a building within half an hour after the breaking out of the fire, there seemed to be no reason why the water should run away between the walls and the flooring. He had put rugs on the floors to act as dams for stopping the water running out by the doors, and he found in most cases the floor would not hold the water, and that was a serious cause of loss. Mr. Lewis had brought forward some good instances of wood charred at a low temperature. It could not be too generally known that wood in contact with iron at any temperature, acquired a combustibility which was extraordinary. As far as his experience went, if wood remained for any length of time in contact with even cold iron, it would be ignited quicker than wood not so circumstanced. He was not aware that any investigation of that point had ever been taken up: he could not account for it himself, but it was a fact which had struck him on numerous occasions.

The President remarked, that that was opposed to the theory of Mr. Horace Jones in respect of the instance he had given of the preservation of the timber coated with iron, namely, that the wood was protected from fire.

Captain Shaw said he understood that plan was adopted for purposes of strength.

Mr. Horace Jones said, in the case he brought forward the wood was not charred. There was no current of air between the iron coating and the wood. The timber was baked but not burnt, and remained sufficiently strong to carry the weight—and that was more or less the case with all the heavy timbers so protected.

Captain Shaw went on to remark, that if they applied a certain amount of heat to wood of any kind, more especially soft woods, a highly inflammable gas was generated, and that gas ascending to the upper parts of a building on fire in a heated condition, was readily ignited there. We scarcely knew how to prevent that, except by an opening at the top to allow that gas to escape; and this mode could not be adopted without adding to the draft, and, therefore, to the intensity of the fire. Top floors have been burnt out from this cause, while intermediate floors have remained uninjured. Mr. Lewis had brought out the fact that iron girders and other things in buildings were made to imitate stone. It struck him (Captain Shaw) that a great many things in buildings were made to appear what they were not. One often met with what seemed to be a cut stone front, but when it was exposed to a moderate heat, it scaled off about an inch thick and revealed a brick or rubble wall behind it; whereas the whole building had previously seemed to be constructed of solid stone. That was a point which any one, who went about to fires as he did, could not fail to observe. They found walls which looked good and sound were not so in reality, and were far from being what they pretended, Again, they found that lath and plaster and bricks were used indiscriminately in a house. On the first floor there would be a lath and plaster partition, on the next floor a nine-inch brick partition, and on the floor over that lath and plaster again, and over that a brick partition. It seemed to him that there was great risk in such a class of building, as the moment a shock came it must greatly affect such portions as were constructed so unequally with regard to strength and materials. It had been well said by Mr. Lewis, that he knew of no case in which solid brickwork was destroyed by fire. He did not mean to say it was not affected in numerous ways by intense heat, but fire never passed through the wall. He had seen nine-inch work all but reddened through, but not so much heated on the other side as to ignite gunpowder. There was another material introduced into building on which he had hoped to have heard some information, viz., hollow and perforated bricks. It must strike every one that, in the use of pierced bricks, considerable risk was incurred in case of fire, more particularly if those bricks were daubed over with stucco, which they saw in such enormous quantities in many parts of London. In case of fire there was great danger of those walls falling in consequence of the confined air within them expanding and splitting the bricks. Another point of importance was the proper bonding of the angular walls of buildings. Warehouses made to carry enormous loads should be so well tied at the corners as to make it impossible under any circumstances of fire for them to tumble down. In a recent case of fire in a warehouse the gable wall tumbled down without, as far as he was aware, the slightest reason for its doing so. A faulty mode of constructing buildings, greatly increased not only the risks ran by those who had the duty of putting the fire out; but also the ultimate loss in a pecuniary point of view. In France it was a rare thing to find a wall tumble down: one reason for which might perhaps be that the warehouses were not so enormously loaded as in England; but another and more valid reason appeared to be that this branch of building appeared to be more attended to in that country than in this. In London buildings of the warehouse class it was too much the practice to load the floors of newly-finished and unfinished buildings before there was time for the work to dry, and whenever a fire occurred in such structures it was always attended with most disastrous results. Returning, then, to the subject of staircases, Captain Shaw remarked that the great danger of stone stairs was their liability to become detached from the main wall into which they were fastened, the support being only at one end. As an improvement upon this system, he mentioned the case of the staircase at the Sailor's Home in Wells Street, where, in consequence of the great shock that was occasioned by large bodies of men going up and down simultaneously to and from their meals, also in carrying heavy sailors luggage up, support was given to the stairs at the outer edge by wrought iron girders, which of course greatly added to the strength of the structure, and would be found of advantage in case of fire in preventing the stairs tumbling down. There was one thing in particular which ought to be quite settled—that was as to the danger of metal plates in contact with the ceiling over gas lights only a short distance from the ceiling. If they used metal for the purpose, it should always be separate from that which it was intended to protect, and a current of air should be allowed to circulate between. He would rather have a common plaster ceiling in the room under his bed than a metal plate attached to and touching the ceiling over a gas light. Some general remarks had been made as to the provisions of the Building Act in relation to fires. He had looked into that Act a great deal, and could find nothing but the greatest confusion in all the terms connected with fire, and could not discover that any practical ideas for stopping fires existed in the minds of the framers of that Act. One gentleman had stated that party walls were a certain bar to fires. He would ask did the present party walls in London stop fires? He said no: as they found numerous instances of fires passing through what were called party walls.

The PRESIDENT imagined that would depend very much upon the time at which the walls were built; he thought it would hardly apply to the walls at the present time.

CAPTAIN SHAW said that was a point to which he wished to call attention, as party walls formed a matter of very considerable importance in the present day. It every day and night happened that a great deal of trouble had to be taken to protect the houses on either side of one that was on fire, showing that the party walls were not what they should be, since the fire penetrated continually even those of quite recent erection, as his own experience enabled him to testify. As a general remark on the subject of warehouses in London, he would say he thought the greatest measure of safety was to be found in the proper subdivisions of the premises, and the separation and classification of the large stores of inflammable materials there deposited. In reply to what had fallen from Mr. Papworth on the subject of steam-fire engines, he would only say he was extremely sorry to hear any disparaging remark made upon those machines, on which more than on anything else perhaps the safety of London from fire at present depended. The supply of water was regulated according to the discretion of those experienced in such matters. It was ordinarily delivered through nozzles, varying from one-sixteenth of an inch to one and a half inch; and he knew of no instance in which just complaint could be made of an excessive quantity of water being thrown. The men got as close as possible to their work, and stopped playing in such good time, that they always had to go on again; and in valuable buildings he might say the greatest care was invariably taken not to throw more water than was absolutely necessary. In conclusion he would remark that in the buildings of the present day in London, carried up to so great a height, due provision ought always to be made for serving a supply of water in cisterns elevated well above the roof, as even with the great power of the engines now employed, they would be of little service in attacking a fire at so great a height. These might be made sufficient to keep the fire in check till the engines arrived. He thanked the meeting for the courtesy with which he had been received, and congratulated Mr. Lewis most cordially on his success in a lecture, touching on many important points hitherto but little attended to or understood.

Mr. THOMAS MORRIS, Associate, remarked that all the facts brought before them this evening accorded with one rule of science. It was well known that confined air was a non-conductor of heat; and in all the cases mentioned where there had been air-tight compartments formed by accident in floors or walls the fire failed to penetrate, and it was to such physical conditions he thought they must mainly look for an abatement of the usual destruction by fire. They found that iron was not a trustworthy material, nor indeed any other material which was a conductor of heat. In the consideration of this subject the earthy materials and glass had been left out. It might be taken that in non-conducting properties one inch of glass was equal to thirty inches of iron. The old practice was to break open the door of the house on fire, to send the firemen in, and then to break all the windows with the jets of water, and they seldom heard of a house so treated not being completely burnt down. The proper mode in a case of fire, no doubt, was to master it if possible from the top.

The vote of thanks was then passed to Mr. Lewis for his paper, and a similar compliment was paid on the proposition of the President to Captain Shaw, for the practical information with which he had favoured the meeting, which then adjourned for the Easter recess.

ON THE PRESENT TENDENCIES OF ARCHITECTURE AND ARCHITECTURAL EDUCATION IN FRANCE.

By Geo. R. Burnell, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, April 24th, 1865.

The maxim is as trite as it is true, that the intellect of a great nation is most correctly judged by the exhibition of its taste, in all the ways in which men strive to convey their impressions of the good, the beautiful, and the true; and in no instance is the truth of this maxim more powerfully impressed upon the observer than in the analogy to be traced between the forms of faith, and the principles of philosophy, on the one side, and the style there is given to architecture on the other. To perceive the connection between the two manifestations of intellect there is required, however, a degree of impartiality—a kind of freedom from the influences that may prevail in society—that can hardly be expected from the citizens of any country; and therefore a foreigner is more likely to read correctly the signs of the times than they who reciprocally act, and react, upon the expression of their taste. It is upon this ground that I have ventured to call your attention to the subject of the state of architecture, and of architectural education in France, at the present day, as I think that we might derive many lessons, both as to what we might well copy and what we should do well to avoid, from the experience of our very ingenious, and in spite of their asserted frivolity, of our very logical neighbours, who are now engaged in working out one of the greatest problems that the human intellect has ever undertaken.

As was to be expected, the present state of architecture in France, is to a great extent the result of the past generations, who "have left their footsteps on the sands of time" in an ineffaceable manner. The Romans first taught the Gauls to build, and to clothe their thoughts in the outward and visible signs of the solid, substantial, masonry which characterized the productions of the masters of the ancient world. It would be too long were I to endeavour to trace the influence of the Middle Ages upon the expression given to architecture; but I may say this, that the various styles that arose in France were, all of them, local manifestations of the informing spirit that inspired them; and that they were all strongly marked by the character of the ages when they arose. The Renaissance, in its turn, assumed a decidedly French complexion in its early days, and it only passed to the semi-classical school when the Italian taste became dominant in the earlier days of Louis the XIV. The French architects at this time seem to have adopted the principles of Vignola, and they have always been faithful to him, notwithstanding their occasional vagaries in the Rococo style of Louis the XV. or in the Greek style; until at length, in the reign of Louis the XVI., they fairly began to work out their architecture for themselves. This effort was simultaneous with the attempt then made to bring back society to its original basis; and, as the French people have been tossed about without a guide in their attempts to solve this problem, so the architects, who have striven to work out the mode of thinking of the society they were charged to represent, have been struggling in vain to discover the forms which would best represent the state of the public mind. In the days of the Republic, the architecture was as stiff and formal an imitation of the Greek and Roman principles, as the style of oratory which the admirers of Jean Jacques Rousseau and Ossian had introduced. In the days of the Empire, the style of architecture was a stilted yet a manly style, that was strongly characteristic of the man who ruled France with a rod of iron, and made every manifestation of her taste a reflex of his mind. In the days of the

Restoration, the genius of the nation began to display itself more freely. And in those of Louis Philippe, that genius beamed forth with purer rays, in every instance where the inherent love of centralization, that is so distinctly marked in the French mind, would allow it to manifest itself. The influence of this latter spirit has only tended to develope itself more and more under the sway of the present Emperor, until at length the whole French architecture may be described as a reflex of the tastes of one man, acting upon a school that had been long prepared to receive the impress of his mind.

It must not be understood that, in thus seeking the effect of the centralization that prevails in France at the present time, the efforts of the past generations to introduce that system are lost sight of. On the contrary; as early as the reign of Henri IV., there were signs of the taste of the capital invading the provinces, which went on increasing in their significance during the reigns of the Bourbons, who succeeded him upon the throne. But in those days something of the spirit of local independance still survived, and there was an architecture of the neighbourhood of Marseilles that was as distinct from that of Paris, as was the architecture of Lyons, Bordeaux, Rouen, Nancy, and as were distinct from the political organization of the capital, the systems that prevailed in the different *pays d'états*, and the *pays des elections*. The provinces of France could then think for themselves, and they dared at times to assert their privilege, as we may see in the squares and places of Nancy, for instance, that were built in the reign of Louis XV., under the immediate patronage of Stanislas, King of Poland, who was provided with a refuge in that town, and did much to elevate the taste of the few subjects committed to his care. All this, however, was at the period of the Revolution ruthlessly destroyed, and the influence of the capital was substituted for all the local manifestations of intellect; until at last it was found to be literally true that France had become *one* nation, that derived all its ideas and modes of thought from one centre; and that the changes produced in this centre were immediately communicated to the whole mass of the nation, in all its parts and in all their strength and weakness. Emphatically Paris is France, and all the intellectual movement of that kingdom must be sought there, by whoever would endeavour to understand the various phases of the national mind. This tendency has its advantages, no doubt, but it has the inconvenience of substituting the taste that is, perhaps, well suited to the materials and the temperature of one climate and one condition of the soil, for the varying influences of nature affecting a whole country. And it has the effect of subordinating the local manifestations of genius to the influence of those who are in possession of power in the capital, which is always subject to the caprices and whims of those who obtain power by the strange political revolutions that we have witnessed in our days.

It seemed, during the period of constitutional government under Louis Philippe, that the French people would make some effort to throw off the spirit of centralization that was gaining ground with them in architecture as in other things; for, in that time, the Mediæval school became rather the fashion, and the local tastes were consulted as far as possible in the buildings that were then erected. M. Lenoir, Lassus, Viollet le Duc, Calliat, de Caumont, Didron ainé, and a host of enthusiastic revivalists were then employed, and the public mind seemed to be brought back to the tastes and the forms of other times, when France could boast of producing an architecture of its own, that was characteristic of the modes of thought, the faith, and the habits of the people that gave it birth. But this movement was not founded upon anything national; it was but a galvanic kind of vitality, that ceased as soon as the romantic movement on which it was founded had subsided. It in no manner answered to the wants and feelings of Frenchmen in the present times; and though there have been executed in the so-called spirit of revival many remarkable works, amongst which the completion of the Church of St. Ouen, the restoration of St. Eustache, the St. Chapelle and Notre Dame of Paris, the restoration of the Cathedral of Auch, the building of the Church of Bon Secours near Rouen, that of

St. Clotilde in Paris, the Churches at Boulogne and at Belleville, &c., may be cited; yet there was about these works a spirit that, after all, was a distinctly modern one, and the effort to return to the past was but an attempt to revive "those old bones." There were attempts made to introduce the Mediæval style in some of the private houses of France, which were marked by great skill in the adaptation of the forms of an architecture that was *not* in accordance with the wants or the tastes of the actual generation; but this was decidedly an effort, and it required too steady an application on the part of both the architects and the public to succeed. The revivalists of the style of the middle ages have, therefore, nearly passed away from the scene, and they have left the followers of the modified Italian school in unlimited possession of the means of influencing the national taste,—whether for good or for evil remains to be seen hereafter.

At the latter part of this reign, and in the early days of the Republic and the Empire, there appeared two distinct phases in the development of architecture, that have had different kinds of influences upon the subsequent progress of the art. The first of these was the introduction of the style of art that had been invented, if such a term may be allowed, by M. Duban, and had been applied by him in the new buildings of the Ecole des Beaux Arts, and in the Bibliothéque St. Genevieve, by M. Labrouste, his great friend; and the second was the invasion of the province of the architect by the civil engineer, which is still gaining ground, and menaces to exclude the former body of men from the exercise of their profession. The influeuce of M. Duban, assisted as it was by the efforts of Labrouste, Vaudoyer, Lebas, St. Armand, and others, was for a short time prevalent, and the French taste seemed to be fast leaning towards this manner of giving a "*form and spirit*" to the wants and feelings of the population; but, in spite of the undoubted merits of the style, it seems never to have taken a strong hold upon the mind of the nation; and, indeed, the additions that have been made of late to the Ecole des Beaux Arts, under the orders of M. Duban himself, are enough to disgust any one, who can at all think, with the principles upon which that gentleman worked. Mr. Papworth correctly described this style as "the bed post and valence style;" it looked like the production of an upholsterer; it was characterized by small mouldings, and hollow incised ornaments, and generally by a weakness of composition, that did much to indispose the public towards its adoption. This is to be regretted, because at any rate M. Duban, and the architects who followed in the style that he introduced, strove to eliminate one which should be in accordance with the wants of the society that surrounded them, and their failure has left little chance of the establishment of anything of the kind. The influence of this school of architecture may, however, be detected in the great attention to detail, and in the small character of the ornamentation that are now the fashion with the architects employed by the Government, or by the municipality of Paris; indeed, it may be suspected that much of the taste—or rather the want of that quality—that is displayed in the new Gare du Nord is to be accounted for by the influence of the style introduced by M. Duban, though it would hardly be fair to make this style responsible for all the faults of design that are there committed.

The other phase of the architectural development in France has produced effects which seem to be much more powerful upon the form which the national taste is about to take; and it is to be observed, too, that the same cause is at work with ourselves, and it is likely to produce the same results. I allude to the intervention of civil engineers in the designing of buildings that always were considered to belong to the province of architects. For my own part, I regard the distinction between the two professions as very minute, if there be any real line of demarcation. The fact that engineers are more directly concerned with the investigation of the laws which regulate the action of forces in motion, whilst architects have more to do with those forces in repose, seems to me utterly unworthy to establish the profound difference which it has done between engineers and architects. It may be that the avocations of the first of these set of professional men being more immediately connected with the applied sciences, they are led to the cultivation of science to the exclusion of art properly so called; whilst the architect is led, by the natural exclusiveness of the human mind, to keep science subordinate to art in the buildings he designs. But so it is at the present day, and architects as a general rule, at least in France, do not cultivate in a proper spirit the sciences that enter into the various branches of their pursuit. It was not always so, however; and Leonardo da Vinci, Michael Angelo, Da Vignola, Mansard, Wren, Herrera, Fra Giocondo, Perronet, Vanvitelli, and even Telford, may be cited amongst those who were equally distinguished as architects and engineers. Of late the distinction has been gaining ground very fast between the two professions, and it is sad to reflect that it is assuming the character of the exclusion of the scientific element from the studies of the architect, who seems to think that he must look upon the exercise of his profession as being simply the means of introducing an artistic expression in the buildings he is employed upon. This age is, however, essentially a material one, and the applications of science that it delights in are of a dry, hard nature, that lend themselves but little to the picturesque, or that are incapable of the introduction of much art, although they require the highest branches of knowledge to ensure their execution. The consequence of this has been that the architects have been cast aside and the engineers have been more and more employed in their place, until at length the distinction that has been allowed to grow up has been almost recognized as a real one, and the architects are no longer employed in those buildings where there is room for the application of abstract science, but the end and aim of their occupation is made to be "art for art." The exclusion of the body of architects has not stopped here, but it has been made to extend to the construction of buildings that are in any way connected with the daily applications of science, and we see now not only that docks, harbours, piers, canals, railways, gas works, and water-works, are committed to engineers, but that architects are considered to be incapable of designing the bridges, aqueducts, viaducts, stations, or the thousand and one buildings that are incidentally connected with that class of operations. The administrative principles of the French nation had, long before the period that I allude to, tended to throw the construction of such buildings into the hands of the engineers of the Ponts et Chaussées; but about this time they were employed to design the buildings which were connected with the railways that then began to be executed in France, and in which the introduction of iron as a material of construction seemed to require a greater amount of scientific knowledge than the architects were thought to possess. The erection of the Entrepot des Marais, of the original station of the Northern Railway, of the Strasbourg Railway, of the roof of the Rouen Railway in the Rue St. Lazare, may be cited as proofs of this tendency; and it must be confessed that they were all of them marked by a high spirit of scientific knowledge, and by an earnest effort to give to the means employed the character which was most appropriate to the ends those buildings were designed to serve. The Strasbourg Railway Station, in fact, was an original, and a very successful attempt to design a new class of construction; and it did much towards settling the spirit in which that class ought to be treated; but the effect of the engineers being employed to design architectural works became thus more and more apparent, and people began to ask themselves what necessity there was for employing a special body of artists to design the buildings that, after all, were found to be nearly as well designed by the scientific men employed in the erection of the other parts of the work, so far as regarded the artistic effects that they were intended to produce.

The great works that have lately been executed in Paris, under the vigorous impulsion of the Emperor, supported as he has been by the singular administrative ability of M. Hausseman, the Prefect of the Seine, have, in their turn, done much towards the development of the spirit of centralization, and towards the habit of regarding the treatment of architectural compositions from what may be called the engineering point of view. The organization of the public works of the city of Paris is, in fact, as nearly as possible, copied from the organization which prevails in the other branches of Government works; and the "service des Architectes" is there arranged upon the strict system of what is almost a hierarchy, which effectually destroys all individual efforts, and tends to substitute for them the strict rules of a mathematical profession. Thus, the new members of this service have to pass an examination, and, having gone through this ordeal, they enter the ranks of the administration, which they follow, step by step, according to their seniority. The chief of this service is M. Baltard, who had gained his reputation, it must be confessed, in the open field of competition, as the four "*architectes en chef*" who work immediately under him had also done; but the choice of the architects will, hereafter, be confined to the ranks of those who have gone through the routine of business as it is understood in public offices in France, and they will be selected not so much on account of their reputation as on account of their knowledge of the system they are employed under. The distinct attributions of the four "*architectes en chef*" is, it must be added, another motive to this tendency; for they have their distinct provinces, and the man who is charged with the erection of the buildings such as the casernes and the tribunals, does not in any manner interfere with the erection of the buildings that are intended for public education, or with the discharge of the municipal laws. It follows, from this organization, that all the works that are undertaken by the city of Paris are, as it were, designed by one and the same mind, so precisely are they all alike in their architectural expression, so utterly devoid are they of all character, or originality of feeling. The same style is observable, in fact, in the Marché du Temple as marked the Halles Centrales; the same feeling is observable in the Church of St. Augustin and the Church of La Trinité; the same taste may be traced in the various elevations that are to be seen in the long, tedious lines of the streets with which Paris is now intersected, to the great benefit, no doubt, of the traffic, but to the great loss of the picturesqueness, of the town. In fact, the buildings of modern Paris have a monotony of character which is not redeemed by the science that is displayed in them, for at present the *architectes en chef* that have been employed upon them have not been forced to prove that they had the technical knowledge that is considered to be necessary for the exercise of their profession, though it must be confessed that they have been selected with especial reference to their reputation as scientific men, who were anxious to redeem their art from the species of disgrace into which it had fallen in public estimation.

A great change has recently been made in the system of art education in France, by what is called "the decree of the 13th of November," 1863, in which the Emperor has quite remodelled the constitution of *l'Ecole des Beaux Arts*, and has tried to break with all the traditions of the past, which certainly were of an aristocratic character, and such as might have been expected from a body organized by Louis XIV., and under the direct influence of Lebrun and Poussin. The reforms that have thus been introduced have given rise to much criticism; but, as far as regards the teaching of architecture, there does not appear to be much ground to question the necessity which existed for a radical change from the system that had previously existed, though the means adopted hitherto have not succeeded in producing any result which was at all commensurate with the promise that was held out. The former organization of the *Académie des Beaux Arts* left, in fact, the Government patronage in the hands of the members of the *Académie;* and the prizes were therein given as rewards for those who were brought up in the style and manner of the members of that body, instead of being given to the patient merit of the young men who were struggling into notice. It followed, as a natural consequence from this state of things, that there was a distinct school, and a distinct mode of handling the subjects that the Academy thought proper to honour; and, as the money that was devoted to the maintenance of the school of Rome was obtained from the whole nation, it also followed that the tastes of the official school were those of all France, which was thus made to suffer under the influence of the centralization so imposed. The decree of the 13th of November proposed to change this state of things, but it has not yet succeeded in either modifying the spirit of the teaching, or of the distribution of the rewards, by the leaders of the architectural profession, who are now, as they were before, the most distinguished men in the ranks of the Academy, but who have to a very small degree the knowledge of what is going on around them, or of the wants of the age in which they live. Thus, the directors of the Ecole des Beaux Arts, for all that concerns the education of young architects, have drawn up a programme of the course of study that they recommend to their young friends; but they do not insist upon the pupils being able to pass their examination in all of these branches of knowledge. As was to be expected, the young men, who are thus free to choose their own studies, do not show any kind of predilection for those branches that require severe mental toil and long-continued effort; and the chair that has been erected for teaching them the application of mathematics to their profession, and the chair that was destined to teach them the history of the various forms of architecture, as they were a reflex of the social habits, and modes of life and faith, have consequently been treated with just the same amount of contempt that they would be in England; for our young architects look down upon any attempt to teach them the philosophy of their profession with the utmost degree of self-satisfied conceit.

The motives that induced the Government to "revolutionize" the teaching of the *Ecole des Beaux Arts*, in the manner that they did by the decree of the 13th of November, were nevertheless pure and noble, although circumstances have hitherto prevented the results that they anticipated from arising from them. The system that prevailed in Paris, so far as regarded the education of architects, was, in fact, a close monopoly in the hands of those who had influence enough to secure their election in the ranks of the Académie des Beaux Arts: in this manner, that although their *atéliers* did not enjoy any peculiar privilege, yet the fact that they had the unlimited control over the distribution of the prizes that were the ambition of every student, secured them what was tantamount to a monopoly of the education of the rising generation. As a natural consequence of the position thus occupied by the members of the Academy, the course of study was also very confined; for the masters did not think themselves bound to teach their pupils much, and the latter were glad enough to leave the arduous part of their profession aside altogether. There were, previous to the decree of 13th of November, courses of lectures that were supposed to be given by the various members of the *Ecole des Beaux Arts;* but they were so few and far between that the young men lost all interest in them, and they had finally ceased altogether. Thus there were in the architectural education of Paris some grave defects: the first was, that the body to whom the State delegated its powers of administering the funds at the disposal of the school was a self-elected body, chosen from a limited number of subjects; and consequently it was thus likely to transmit from generation to generation the Academical spirit and the Academical traditions. The second was, that there always lurked in men's minds a suspicion, well or ill founded, but which circumstances rendered inevitable, that the recompenses that were at the disposal of the Academy were given in preference to the pupils of the professors of the school over those who were brought up outside the bounds of their teaching. The third was that this teaching was very defective, and it in nowise corresponded with the state of professional education that prevailed in every other branch of such education in France. It was to remedy this state of things that the efforts of the Government were directed. The professors of the Ecole des Beaux Arts were at once removed from their high office, and the distribution of the prizes was entrusted to a jury of the most distinguished men of the profession, who were chosen by lot out of a list that was prepared beforehand. The contest for the prizes was thrown open, in fact, to all the world, and the privilege that had been before enjoyed by certain *atéliers* was at once abolished; and the Government took precautions to ensure that a proper course of education should be provided for the young men, by appointing a certain number of professors, who should give them a regular course of lectures on the subjects that were of the greatest importance. Practically, it was found that the Government had in this matter reckoned without their host, for the young men who were being brought up to follow architecture did not see the necessity for the radical reform that was thus attempted to be introduced into their course of training; and they have, for the present, as was before said, completely ostracized some of the professors that the Government had named. Perhaps the action of the Government has been premature in this respect; for the jury that has been named to distribute the prizes has not thought it necessary to enforce the attendance of the pupils on all the branches of education provided for them; and the architects of Paris are as likely to be deficient in their knowledge of mathematics, and of the scientific part of their profession, as they ever were. There appears to prevail a prejudice, on the part of the professors of that art, that the distinction of an architect lies in his pencil, and that, if he do but know how to draw, all the rest of his education is but a matter of surplusage. With ourselves, this is very much the state of feeling, among the younger members of the profession at any rate; but, if I might be allowed to express my opinion on the subject, it would certainly be to the effect that the course of education that is thus shadowed forth would produce as decided a failure as the similar one that prevails in Paris has most unquestionably done.

M. Trélat, the Professor of Civil Construction at the *Conservatoire des Arts et Metiers*, struck with the defects of the education that was provided for the young architects of Paris, has lately organized what appears to be a remedy for this state of things; and the Government is very anxious that he should succeed in his efforts, for it has recognized that hitherto its intervention in the matter has only thrown the state of education of these young men into confusion, without producing any good effect upon it. The system of M. Trélat consists in the establishment of a school of Architecture, organized in something like the manner of the ancient *Ecole Céntrale des Arts et Métiers*, where the students would be obliged to prove their capacity to understand the course of study that they would be expected to follow, by undergoing a previous examination; and then they would have the advantage of a regular series of lectures on the various branches of their profession, accompanied by a course of application in the *atêliers* under the direction of the head of this school. M. Trélat seeks, in fact, to make his school one which would produce good, sound, theoretical and practical architects, who would have the advantage of being taught the elements of their profession by the most eminent masters in the several branches of the art, and who would have a direct interest in causing the education of the young men committed to their charge to be of the most appropriate character to the wants of their time. The success of the attempt thus made to introduce new elements of study must, of course, be in a great measure dependent upon the men that M. Trélat will associate with himself in the attempt to carry out his design; but it is certain that hitherto the system that has prevailed in France, or rather in Paris especially, has proved to be a miserable failure, and the young architects that have been produced by that system have shown themselves incapable of accommodating their art to the wants or to the resources of their age. I am myself inclined to believe that the attempt which is being made by M. Trélat to retrieve the education of the architects from the reproach of being utterly inefficient, will only result in the preparation of a body of men who may be able to play well their part as "*functionnaires;*" and that the inspiration that ought to be the characteristic of great artists may be destroyed by their very course of training in the various parts of their profession. There is the danger attending the organization of the school that M. Trélat contemplates, especially in a country like France, that the Government may in the end avail itself of it, and thus still further extend its influence upon society. This is the more to be feared, inasmuch as the Government will consider itself bound, in some manner or other, to provide for the placing of the best pupils of this kind, and as they will have at their disposal a number of positions as *conducteurs* and *inspecteurs des travaux* in Paris and the Departments. The action of the centralization indeed tends to make itself felt more and more in France, and thus to destroy everything that savours of originality and boldness of thought; or that may lead to questioning the principles upon which the organization of society is founded, in little things as in great. The effect of this would be I am convinced to destroy the characteristics of the French school, and to substitute for it a regular methodical treatment of architecture that would be somewhat like the style that is in fashion in Paris at the present day, which seems all to be designed upon one mould, and that too of a very equivocal kind of taste. M. Trélat's object is however not in any way opposed to that of the Government in their organization of the *Ecole des Beaux Arts*; he only seeks to prepare young men for the courses of lectures that they will have to follow, and to compete worthily for the prizes that are placed at the disposal of the Administration. So far the objects are good; and every one must applaud the energy with which M. Trélat has pursued them.

The architecture of France is now, therefore, it appears to me, in a very unsatisfactory state, with the uncertainty that prevails upon the future prospects of the art, and the doubt as to the tendencies of the movement of society in the capital and in the provinces. As was before stated, the school of Paris is paramount in the country; and though the mediævalists have produced some very distinguished artists, such as Viollet le Duc, Ruperic Robert, Calliat, César Daly, De Baudot, Verdier, Cattois, Chateau, &c.; yet still the feelings and the taste of the people point to the development of the style founded upon the later Italian school, as being the direction in which the efforts of their architects should be directed. There is a kind of reaction produced by the description of material that is generally employed in building, which seems to render this style almost imperative, which said reaction has a far more subtle influence than many people are inclined to believe; for the fact of using large stones superinduces the habit of employing the trabeated style of architecture, in preference to the style of small stones arranged in the arch form, as would be the case in the practise of a revival of the Mediæval architecture. But however this may be, the modern architects of Paris and of France seem to have confined themselves to the study of the best methods of developing the modern national style of architecture; and even those who have, like M. Hittorff, evidently been under the inspiration of Greek architecture, as he has been in the new buildings designed for the Northern Railway, even these people have been unable to shake off the traditions that cling to the soil as it were. There is a terrible want of originality about the new buildings that rise up on every side with such feverish rapidity, and the taste of the Prefect of the Seine appears to have been consulted in every case where the public money was concerned, as in the churches of the Trinité, of St. Augustin, the new theatres, the tribunaux du commerce, and the Prefecture of Police. In all these buildings, in fact, the introduction of a dome appears to have been a necessity, which the architects could not escape from; and the Fontaine St. Michael is as singular a specimen of bad taste as the imagination of man could conceive. A similar amount of uncertainty seems to prevail in the buidings that are erected by private persons, and a similar want of taste may also be perceived in them as in the various railway stations, and the various edifices that are rising in every direction, in all which the engineering principles are contending with the architectural or the artistic ones; or the taste of the architectural details is at the least of a very equivocal character. In the provinces again the same thing may be observed to take place, for in Lyons the Tribunal du Commerce by M. Darbel, the houses built by MM. Echemier, Schnavar, Flacheron, &c.; those built at Rouen by MM. Desmarais and Bourguignon, &c.; are as little likely to be considered as being a reflex of the present times, as the similar productions of the Paris school. The fact appears to be that the French architecture is now in a transition state, and there is no principle recognized on which the bulk of the nation proceeds in the elimination of the style that is to be followed. Mediævalism has been tried, and has been found wanting; the engineering principles have been applied, and though they have produced some very remarkable results, yet they have been thus introduced by the men who were not accustomed to have the control of buildings, and therefore who were not in possession of the public confidence, and thus were not able to command a share of the public support; and so the French school has been left without direction, and has been forced to live as it were on its past history. The men who of late years have carried off the *prix de Rome* have done little to advance the progress of art. M. Garnier has done nothing that can be cited in this manner, for the new opera is a large building, it is not a great work conceived in a philosophical spirit; M. Baltard has executed some remarkable buildings, but they are totally devoid of principles of taste, of a character at least to influence the age; M. Robert de Fleury has done nothing that will remain as a landmark in the history of the times; and the productions of the four *architectes en chef*, who were all of them medallists, or *grand prix de l'Académie des Beaux Arts*, have been without any distinct character. There is no informing spirit abroad in fine amongst the French architects; and the worst of the matter is that they seem to be deficient in the perception of their want of such principles of taste, and of the scientific knowledge that might lead to this desired end. Up to the present time, too, there does not appear to have existed any means (of a public nature that is to say) of acquiring the education that was required for the exercise of the architectural profession; and even now, the measures that have been proposed for that purpose by M. Trélat, and the reform of the *Ecole des Beaux Arts* must be looked upon as experiments only. French architecture is, indeed, in a very unsatisfactory state; and the education of the young men who are intended to follow that pursuit is practically unknown, so far as the science of their profession is concerned.

Now the lessons that I think we may draw from what has taken, and is taking, place in France, are that we should at once make a vigorous effort to introduce a more scientific manner of treating the class of subjects that come within the reach of the architectural profession, and we should do well to study the laws that regulate the mode of employing the various materials that are within the architect's province. This by no means excludes the artistic treatment of those materials; on the contrary, the first condition of their being well and satisfactorily used is that their properties should be well understood, and should be applied in the best and most logical manner. In this manner the tendency of society to the employment of civil engineers in buildings that are properly within the range of the architect's pursuits would, I am convinced, be checked, and the gain to the public would be immense, as any one may convince himself of by a casual inspection of the lamp-posts in Southwark Street, of the details of the engine-house at Crossness, or the iron work of the Charing Cross extension. The methods of doing this are by no means difficult to discover; they would consist in the establishment of some course of examination previously to the students being called upon to follow a course or courses of lectures upon the various points connected with the chemistry, geology, mathematics, hydraulics, and physics that he is likely to have to contend with; the various laws regulating the hygienic conditions and the economical ones he may be called upon to fulfil; and the history of his art in the various ages that it has gone through such a course, combined with a teaching of drawing and perspective; (and by thus citing *drawing*, it must be understood that I do not mean a style of that art which consists in the use of the drawing board and T square alone, but free hand drawing, and the power of representing the artist's ideas by a sketch, or by a finished and shaded drawing); such a course, if aided by the practise which a young man might find in the office of an architect in the enjoyment of a fair share of the professional avocations that usually fall to the lot of those who understand their business, would enable the student to begin the practise of his profession with advantages that at present are not within the reach of anybody. I am aware that the Royal Academy distributes certain medals, and that from time to time it sends out to study in Rome or in Greece the laureates that have been thought worthy of that honour; and that this Institution has the disposal of certain funds or scholarships instituted in the honour of some deceased members. There are also courses of lectures given at the Universities, that are intended to educate young architects for the exercise of their arduous profession; but all this seems to me insufficient to produce men who should be able to look upon this profession in a proper light. That profession is essentially as much of a science as it is an art; and the exercise of the art must be accompanied by so much of science as will enable the art to display itself. The French people are beginning to think very seriously of the necessity for the study of the science after they had for a long time devoted themselves exclusively to the cultivation of the fine art. The same circumstances that have driven them to the adoption of that course are acting with ourselves; and though it would be folly to copy blindly all that they do, seeing that we in England have to work for, and in a totally different state of society, yet the leading principles that they have carried into effect, or that they are seeking to apply, may well command our examination, and perhaps our imitation. M. Trélat and the professors of the *Ecole des Beaux Arts*, seem to me to be disposed to give too much attention to scientific knowledge; and they leave too little room for the development of the spontaneous fancies that must be consulted in every artistic production. It would remain for us to copy so much of the organization that they seek to adopt, as would enable us to avoid the errors into which they have fallen; and to strive to make the education of the rising generation of architects more consistent with the general advancement of scientific knowledge.

As to the state of the practise of architecture in France, I must say that I do not think that the English school of architects have much to learn of their neighbours. There is not the same frank spirit of study about the works of the revival school that we may discover in England; and there is not the same spirit of ecclectism that so strongly marks the taste of those who seek their inspiration in the various schools of the past, or who strive to develop their taste in the direction in which society is moving as with ourselves. The French people are, in fact, quite *at sea;* they are at present without guides in the path that is set before them; and the worst of this is, that no man appears to be rising up who has enough power or will to say to them that they must go in the pursuit of style and taste in a particular direction to the exclusion of any other. We are not in England, it is true, in that happy position; but the prospects of architecture seem to me to be brighter because they are founded upon a truer basis than they are in centralized France. There is an immense amount of talent displayed in the new buildings of the Louvre, that were so well begun under M. Visconti, and have since been continued under M. Lefuel; in the Bibliothèque Imperiale, under M. Labrouste and M. André; in the buildings of the Conservatoire des Arts et Métiers, under the directions of M. Vaudoyer; in the various buildings already mentioned as being executed for the Municipality of Paris, and for the Minister of the *Maison de l'Empéreur;* but in all of these there is deficient the feeling that will make the present generation one that will leave its impress upon "the sands of time;" and there is a lack of originality of thought that is very painful to the observer. In fine, it may be said that France does not *think;* and the taste of the nation, as it is exemplified in the architectural character of its buildings, displays the want of this original and creative power in the strongest manner. A nation's tastes are singularly modified by the moral laws that are at work with it; and the French have so entirely abdicated their right of private judgment in political affairs, that they can hardly be expected to have retained the faculty of invention in architecture, which is always the reflex of the public mind under the varying circumstances of life.

Professor KERR, Fellow, moved a vote of thanks to Mr. Burnell for what he considered an excellent and useful paper. He thought the point of the argument, which Mr. Burnell had made out very decidedly, was this:—he had drawn a clear and intelligible contrast between the system of architectural education in this country and that which prevailed in France. He had explained how in France everything is centralized, and how in this country there is no centralization, the difference being characteristic and essential. It was matter of history that in France such centralization, in all possible forms of control, had always obtained—under the most extreme republican government, precisely in the same way as under the most absolute monarchy. It was equally matter of fact that in this country such a system had never been established, with any success, in whatever matter. Public opinion, on this side of the Channel, was a thing that converged, as it were, from the outside in all directions, and gradually made its impression on the centre; whereas, on the other side of the Channel, all public movement (except actual revolt) had its source at the centre—the influence diverging in all directions from head-quarters. It was interesting to note the circumstance, as Mr. Burnell had done, that this precise distinction prevails between the two countries in such a thing as architecture. But we must not too hastily suppose that the comparison goes to the discredit of the French system, or to the magnifying of our own. Each system must be allowed its own advantages. Both would go on, in characteristic directions, as if by natural law, irrespective of all criticism. The system of the French produced results which we could not arrive at in this country. Our system, also, was productive of results unattainable by our French neighbours. Thus it was that at present we suffered under positive disadvantages by the overflowing volume of individual random aspiration—every theorist, however visionary or ignorant, regarding himself as an instrument created for the special purpose of reviving and rejuvenating art by some discovery of his own. Of course, the vast bulk of such enthusiasm only ended in smoke; but its influence was none the less oppressive and distracting, and productive of vain contention. In France, on the other hand, public opinion being a thing concentrated at the head-quarters of affairs, there was much less of this peculiar strife of self-assertion, although, at the same time, there must of necessity be less of what we value as freedom of individual effort. However, both systems were good in their way: the English might congratulate themselves upon works which show more personality of taste; but the French equally might take credit for enjoying that state of happy repose in good taste which we should probably never attain. It was all very well to say there was monotony of design in Paris. In one sense, so there ought to be. If the buildings of the new Boulevards were monotonous in design, why was this so? Owing to want of skill? Certainly not; simply because the *purpose* of those buildings was monotonous. House after house was built in exact repetition of the same requirements. Therefore, one might say, the design, primarily, *ought to be* the same throughout. But, proceeding upon this basis, the French displayed a merit which was all their own. Take their large masses of building, however monotonous in general form, and note the versatility and power of individuality in their *detail*, the peculiar and never-ceasing grace of French architecture. Little tit-bits of design everywhere turned up—no copying from what was over the way, or from what was done five hundred years ago, but intelligent design for the occasion. This was, indeed, a merit which the English architect, however muscular he might feel himself to be, could not afford to undervalue; for infinite grace and polish of detail would always be the charm of French architecture. In conclusion, he would say that these were, of course, only hasty remarks; but he hoped the question raised by Mr. Burnell would awaken the interest it deserved, and receive the careful attention of English architects.

Mr. **Edward I'Anson**, Fellow, rose to second the vote of thanks for a very thoughtful and careful paper, and at the same time took the opportunity of stating that he dissented materially from some of the views laid down. He, for one, did not recognise that intense monotony which was asserted to prevail in the modern style of French architecture. On the contrary, he thought it bore as distinct an individuality as any style that ever existed. He would confirm what Mr. Kerr had stated, that not only were the requirements of the buildings the same, but would add that the police regulations of the City prohibited the façades from being carried up more than a certain height, and the angle of the roof was regulated in like manner. As ground was very valuable in Paris, and as it was always the custom to build to a certain height, it followed that this was a matter beyond the control of the architect, and a point for which he was not responsible. This general uniformity of height might give the appearance of monotony, which, however, in his opinion, was amply redeemed by the amount of detail which the buildings contained, which was beautiful and appropriate, and throughout there were such distinctive characteristics as gave individuality, and considerable contrast and variety. There was no more general character than he believed prevailed in the architecture of all periods. He was satisfied that fifty years hence they would be able to point to the buildings of the present day, and say within a year or two when every building was erected. There certainly existed peculiar distinctive features in the architecture the French architects were now producing, and he thought in diversity of taste the French had shown themselves at least our equals, and some of their buildings had a stamp which set an example to all Europe. The Bibliothèque St. Genevieve, at Paris, by Labroust, was a building by which the architects of England and of the world had ; profitedand if it had not been for the terminus of the Strasbourg Railway at Paris, we should never have had the unrefined imitation of it which we have at King's Cross. He contended this building, of the Strasbourg Terminus, was well adapted for its purpose, was as perfect in design and as completely typical in its way as a Greek Temple. Mr. Burnell had borne his testimony to the monumental work of the Louvre. Which was, perhaps, the greatest of modern edifices which the world presented. Thanking Mr. Burnell for this paper, he must at the same time say, he thought French architecture stood out very distinctively, and showed the French professors of that science to be great artists.

The discussion was then adjourned to Monday, the 29th May.

If Messrs Davy have a copy
by them of Mr Ruskins paper
for the institute with the last
corrections would they please
send it to Mr R at

Miss Bell's
Winnington Hall
Northwich.
Cheshire

Mr Ruskin would be glad
if Messrs Davy could let him
have a rough revise by bearer — there
will not otherwise be time
to correct the paper for Monday
at all. and it will need some
touching. The bearer will call
again, if it is not ready. a
corrected revise shall be early at
~~the printers~~ sent in on Monday
morning.

Saturday. 13th May

AN ENQUIRY INTO SOME OF THE CONDITIONS AT PRESENT AFFECTING THE STUDY OF ARCHITECTURE IN OUR SCHOOLS.

By J. Ruskin, Esq.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, May 15th, 1865.

I suppose there is no man who, permitted to address, for the first time, the Institute of British Architects, would not feel himself abashed and restrained, doubtful of his claim to be heard by them, even if he attempted only to describe what had come under his personal observation, much more if on the occasion he thought it would be expected of him to touch upon any of the general principles of the art of architecture before its principal English masters.

But if any more than another should feel thus abashed, it is certainly one who has first to ask their pardon for the petulance of boyish expressions of partial thought; for ungraceful advocacy of principles which needed no support from him, and discourteous blame of work of which he had never felt the difficulty.

Yet, when I ask this pardon, gentlemen—and I do it sincerely and in shame—it is not as desiring to retract anything in the general tenor and scope of what I have hitherto tried to say. Permit me the pain, and the apparent impertinence, of speaking for a moment of my own past work; for it is necessary that what I am about to submit to you to-night should be spoken in no disadvantageous connection with that; and yet understood as spoken, in no discordance of purpose with that. Indeed there is much in old work of mine which I could wish to put out of mind. Reasonings, perhaps not in themselves false, but founded on insufficient data and imperfect experience—eager preferences, and dislikes, dependent on chance circumstances of association, and limitations of sphere of labour: but, while I would fain now, if I could, modify the applications, and chasten the extravagance of my writings, let me also say of them that they were the expression of a delight in the art of architecture which was too intense to be vitally deceived, and of an inquiry too honest and eager to be without some useful result; and I only wish I had now time, and strength and power of mind, to carry on, more worthily, the main endeavour of my early work. That main endeavour has been throughout to set forth the life of the individual human spirit as modifying the application of the formal laws of architecture, no less than of all other arts; and to show that the power and advance of this art, even in conditions of formal nobleness, were dependent on its just association with sculpture as a means of expressing the beauty of natural forms: and I the more boldly ask your permission to insist somewhat on this main meaning of my past work, because there are many buildings now rising in the streets of London, as in other cities of England, which appear to be designed in accordance with this principle, and which are, I believe more offensive to all who thoughtfully concur with me in accepting the principle of Naturalism than they are to the classical architect to whose modes of design they are visibly antagonistic. These buildings, in which the mere cast of a flower, or the realization of a vulgar face, carved without pleasure by a workman who is only endeavouring to attract attention by novelty, and then fastened on, or appearing to be fastened, as chance may dictate, to an arch, or a pillar, or a wall, hold such relation to nobly naturalistic architecture as common sign-painter's furniture landscapes, do to painting, or commonest wax-work to Greek sculpture; and the feelings with which true naturalists regard such buildings of this class are, as nearly as might be, what a painter would experience, if, having contended earnestly against conventional schools, and having asserted that Greek vase-painting and Egyptian wall-painting, and Mediæval glass-painting, though beautiful, all, in their place and way, were yet subordinate arts, and culminated only in perfectly naturalistic work such as Raphael's in fresco, and Titian's on canvass;—if, I say, a painter, fixed in such faith in an entire, intellectual and manly truth, and maintaining that an Egyptian profile of a head, however decoratively applicable, was only noble for such human truth as it contained, and was imperfect and ignoble beside a work of Titian's, were shown, by his antagonist, the coloured daguerreotype of a human body in its nakedness, and told that it was art such as that which he really advocated, and to such art that his principles, if carried out, would finally lead.

And because this question lies at the very root of the organization of the system of instruction for our youth, I venture boldly to express the surprise and regret with which I see our schools still agitated by assertions of the opposition of Naturalism to Invention, and to the higher conditions of art. Even in this very room I believe there has lately been question whether a sculptor should look at a real living creature of which he had to carve the image. I would answer in one sense,—no; that is to say, he ought to carve no living creature while he still needs to look at it. If we do not know what a human body is like, we certainly had better look, and look often, at it, before we carve it; but if we already know the human likeness so well that we can carve it by light of memory, we shall not need to ask whether we ought now to look at it or not; and what is true of man is true of all other creatures and organisms—of bird, and beast, and leaf. No assertion is more at variance with the laws of classical as well as of subsequent art than the common one that species should not be distinguished in great design. We might as well say that we ought to carve a man so as not to know him from an ape, as that we should carve a lily so as not to know it from a thistle. It is difficult for me to conceive how this can be asserted in the presence of any remains either of great Greek or Italian art. A Greek looked at a cockle-shell or a cuttlefish as carefully as he looked at an Olympic conqueror. The eagle of Elis, the lion of Velia, the horse of Syracuse, the bull of Thurii, the dolphin of Tarentum, the crab of Agrigentum, and the crawfish of Catana, are studied as closely, every one of them, as the Juno of Argos, or Apollo of Clazomenae. Idealism, so far from being contrary to special truth, is the very abstraction of speciality from everything else. It is the earnest statement of the characters which make man man, and cockle cockle, and flesh flesh, and fish fish. Feeble thinkers, indeed, always suppose that distinction of kind involves meanness of style; but the meanness is in the treatment, not in the distinction. There is a noble way of carving a man, and a mean one; and there is a noble way of carving a beetle, and a mean one; and a great sculptor carves his scarabaeus grandly, as he carves his king, while a mean sculptor makes vermin of both. And it is a sorrowful truth, yet a sublime one, that this greatness of treatment cannot be taught by talking about it. No, nor even by enforced imitative practice of it. Men treat their subjects nobly only when they themselves become noble; not till then. And that elevation of their own nature is assuredly not to be effected by a course of drawing from models, however well chosen, or of listening to lectures, however well intended.

Art, national or individual, is the result of a long course of previous life and training; a necessary result, if that life has been loyal, and an impossible one, if it has been base. Let a nation be healthful, happy, pure in its enjoyments, brave in its acts, and broad in its affections, and its art will spring round and within it as freely as the foam from a fountain; but let the springs of its life be impure, and its course polluted, and you will not get the bright spray by treatises on the mathematical structure of bubbles.

And I am to-night the more restrained in addressing you, because, gentlemen—I tell you honestly—I am weary of all writing and speaking about art, and most of my own. No good is to be reached that way. The last fifty years have, in every civilized country of Europe, produced more brilliant thought, and more subtle reasoning about art than the five thousand before them, and what has it all come to? Do not let it be thought that I am insensible to the high merits of much of our modern work. It cannot be for a moment supposed that in speaking of the inefficient expression of the doctrines which writers on art have tried to enforce, I was thinking of such Gothic as has been designed and built by Mr. Scott, Mr. Butterfield, Mr. Street, Mr. Waterhouse, Mr. Godwin, or my dead friend, Mr. Woodward. Their work has been original and independent. So far as it is good, it has been founded on principles learned not from books, but by study of the monuments of the great schools, developed by national grandeur, not by philosophical speculation. But I am entirely assured that those who have done best among us are the least satisfied with what they have done, and will admit a sorrowful concurrence in my belief that the spirit, or rather, I should say, the dispirit, of the age, is heavily against them; that all the ingenious writing or thinking which is so rife amongst us has failed to educate a public capable of taking true pleasure in any kind of art, and that the best designers never satisfy their own requirements of themselves, unless by vainly addressing another temper of mind, and providing for another manner of life, than ours. All lovely architecture was designed for cities in cloudless air; for cities in which piazzas and gardens opened in bright populousness and peace; cities built that men might live happily in them, and take delight daily in each other's presence and powers. But our cities, built in black air which, by its accumulated foulness, first renders all ornament invisible in distance, and then chokes its interstices with soot; cities which are mere crowded masses of store, and warehouse, and counter, and are therefore to the rest of the world what the larder and cellar are to a private house; cities in which the object of men is not life, but labour; and in which all chief magnitude of edifice is to enclose machinery; cities in which the streets are not the avenues for the passing and procession of a happy people, but the drains for the discharge of a tormented mob, in which the only object in reaching any spot is to be transferred to another; in which existence becomes mere transition, and every creature is only one atom in a drift of human dust, and current of interchanging particles, circulating here by tunnels underground, and there by tubes in the air; for a city, or cities, such as this no architecture is possible—nay, no desire of it is possible to their inhabitants.

One of the most singular proofs of the vanity of all hope that conditions of art may be combined with the occupations of such a city, has been given lately in the design of the new iron bridge over the Thames at Blackfriars. Distinct attempt has been there made to obtain architectural effect on a grand scale. Nor was there anything in the nature of the work to prevent such an effort being successful. It is not edifices, being of iron, or of glass, or thrown into new forms, demanded by new purposes, which need hinder its being beautiful. But it is the absence of all desire of beauty, of all joy in fancy, and of all freedom in thought. If a Greek, or Egyptian, or Gothic architect had been required to design such a bridge, he would have looked instantly at the main conditions of its structure, and dwelt on them with the delight of imagination. He would have seen that the main thing to be done was to hold a horizontal group of iron rods steadily and straight over stone piers. Then he would have said to himself (or felt without saying), "It is this holding,—this grasp,—this securing tenour of a thing which might be shaken, so that it cannot be shaken, on which I have to insist." And he would have put some life into those iron tenons. As a Greek put human life into his pillars and produced the caryatid; and an Egyptian lotus life into his pillars and produced the lily capital: so here, either of them would have put some gigantic or some angelic life into those colossal sockets. He would perhaps have put vast winged statues of bronze, folding their wings, and grasping the iron rails with their hands; or monstrous eagles, or serpents holding with claw or coil, or strong four-footed animals couchant, holding with the paw, or in fierce action, holding with teeth. Thousands of grotesque or of lovely thoughts would have risen before him, and the bronze forms, animal or human, would have signified, either in symbol or in legend, whatever might be gracefully told respecting the purposes of the work and the districts to which it conducted. Whereas, now, the entire invention of the designer seems to have exhausted itself in exaggerating to an enormous size a weak form of iron nut, and in conveying the information upon it, in large letters, that it belongs to the London, Chatham and Dover Railway Company. I believe then, gentlemen, that if there were any life in the national mind in such respects, it would be shown in these its most energetic and costly works. But that there is no such life, nothing but a galvanic restlessness and covetousness, with which it is for the present vain to strive; and in the midst of which, tormented at once by its activities and its apathies, having their work continually thrust aside and dishonoured, always seen to disadvantage, and over-topped by huge masses, discordant and destructive, even the best architects must be unable to do justice to their own powers.

But, gentlemen, while thus the mechanisms of the age prevent even the wisest and best of its artists from producing entirely good work, may we not reflect with consternation what a marvellous ability the luxury of the age, and the very advantages of education, confer on the unwise and ignoble for the production of attractively and infectiously *bad* work. I do not think that this adverse influence, necessarily affecting all conditions of so-called civilisation, has been ever enough considered. It is impossible to calculate the power of the false workman in an advanced period of national life, nor the temptation to all workmen, to *become* false.

First, there is the irresistible appeal to vanity. There is hardly any temptation of the kind (there cannot be) while the arts are in progress. The best men must then always be ashamed of themselves; they never can be satisfied with their work absolutely, but only as it is progressive. Take, for instance, any archaic head intended to be beautiful; say, the Attic Athena, on the early Arethusa of Syracuse. In that, and in all archaic work of promise, there is much that is inefficient, much that to us appears ridiculous—but nothing sensual, nothing vain, nothing spurious or imitative. It is a child's work, a childish nation's work, but not a fool's work. You find in children the same tolerance of ugliness, the same eager and innocent delight in their own work for the moment, however feeble; but next day it is thrown aside, and something better is done. Now, in this careless play, a child or a childish nation differs inherently from a foolish educated person, or a nation advanced in pseudo-civilization. The educated person has seen all kinds of beautiful things, of which he would fain do the like—not to add to their number—but for his own vanity, that he also may be called an artist. Here is at once a singular and fatal difference. The childish nation sees nothing in its own past work to satisfy itself. It is pleased at having done this, but wants something better; it is struggling forward always to reach this better, this ideal conception. It wants more beauty to look at, it wants more subject to feel. It calls out to all its artists—stretching its hands to them as a little child does—"Oh, if you would but tell me another story,"—"Oh, if I might but have a doll with bluer eyes." That's the right temper to work in, and to get work done for you in. But the vain, aged, highly-educated nation is satiated with beautiful things—it has myriads more than it can look at; it has fallen into a habit of inattention; it passes weary and jaded through galleries which contain the best fruit of a thousand years of human travail; it gapes and shrugs over them, and pushes its way past them to the door. But there is one feeling that is always distinct, however jaded and languid we may be in all other pleasures, we are never languid in vanity, and we would still paint and carve for fame. What other motive have the nations of Europe to-day? If they wanted art for art's sake they would take care of what they have already got. But at this instant the two noblest pictures in Venice are lying rolled up in outhouses, and the noblest portrait of Titian in existence is hung forty feet from the ground. We have absolutely no motive but vanity and the love of money—no others, as nations, than these, whatever we may have as individuals. And as the thirst of vanity thus increases, so the temptation to it. There was no fame of artists in these archaic days. Every year, every hour, saw some one rise to surpass what had been done before. And there was always better work to be done, but never any credit to be got by it. The artist lived in an atmosphere of perpetual, wholesome, inevitable eclipse. Do as well as you choose to-day,—make the whole Borgo dance with delight, they would dance to a better man's pipe to-morrow. *Credette Cimabue nella pittura, tener lo campo, et ora ha Giotto il grido.* This was the fate, the necessary fate, even of the strongest. They could only hope to be remembered as links in an endless chain. For the weaker men it was no use even to put their name on their works. They did not. If they could not work for joy and for love, and take their part simply in the choir of human toil, they might throw up their tools. But now it is far otherwise—now, the best having been done—and for a couple of hundred years, the best of us being confessed to have come short of it, everybody thinks that he may be the great man once again, and this is certain, that whatever in art is done for display, is invariably wrong.

But, secondly, consider the attractive power of false art, completed, as compared with imperfect art advancing to completion. Archaic work, so far as faultful, is repulsive, but advanced work is, in all its faults, attractive. The moment that art has reached the point at which it becomes sensitively and delicately imitative, it appeals to a new audience. From that instant it addresses the sensualist and the idler. Its deceptions, its successes, its subtleties, become interesting to every condition of folly, of frivolity, and of vice. And this new audience brings to bear upon the art in which its foolish and wicked interest has been unhappily awakened, the full power of its riches: the largest bribes of gold as well as of praise are offered to the artist who will betray his art, until at last, from the sculpture of Phidias and fresco of Luini, it sinks into the cabinet ivory and the picture kept under lock and key. Between these highest and lowest types, there is a vast mass of merely imitative and delicately sensual sculpture;—veiled nymphs—chained slaves—soft goddesses seen by rose-light through suspended curtains—drawing room portraits and domesticities, and such like, in which the interest is either merely personal and selfish, or dramatic and sensational; in either case, destructive of the power of the public to sympathize with the aims of great architects.

Gentlemen,—I am no Puritan, and have never praised or advocated puritanical art. The two pictures which I would last part with out of our National Gallery, if there were question of parting with any, would be Titian's Bacchus' and Correggio's Venus. But the noble naturalism of these was the fruit of ages of previous courage, continence, and religion—it was the fullness of passion in the life of a Britomart. But the mid-age and old age of nations is not like the mid-age or old age of noble women. National decrepitude must be criminal. National death can only be by disease, and yet it is almost impossible, out of the history of the art of nations, to elicit the true conditions relating to its decline in any demonstrable manner. The history of Italian art is that of a struggle between superstition and naturalism on one side, between continence and sensuality on another. So far as naturalism prevailed over superstition, there is always progress; so far as sensuality over chastity, death. And the two contests are simultaneous. It is impossible to distinguish one victory from the other. Observe, however, I say victory over superstition, not over religion. Let me carefully define the difference. Superstition, in all times and among all nations is the fear of a spirit whose passions are those of a man, whose acts are the acts of a man; who is present in some places, not in others; who makes some places holy and not others; who is kind to one person, unkind to another; who is pleased or angry according to the degree of attention you pay to him, or praise you refuse to him; who is hostile generally to human pleasure, but may be bribed by sacrifice of a part of that pleasure into permitting the rest. This, whatever form of faith it colours, is the essence of superstition. And religion is the belief in a Spirit whose mercies are over all His works—who is kind even to the unthankful and the evil; who is everywhere present, and therefore is in no place to be sought, and in no place to be evaded; to whom all creatures, times, and things are everlastingly holy, and who claims—not tithes of wealth, nor sevenths of days—but all the wealth that we have, and all the days that we live, and all the beings that we are, but who claims that totality because He delights only in the delight of His creatures; and because, therefore, the one duty that they owe to Him, and the only service they can render Him, is to be happy. A Spirit, therefore, whose eternal benevolence cannot be angered, cannot be appeased; whose laws are everlasting and inexorable, so that heaven and earth must indeed pass away if one jot of them failed: laws which attach to every wrong and error a measured, inevitable penalty; to every rightness and prudence, an assured reward; penalty, of which the remittance cannot be purchased; and reward, of which the promise cannot be broken.

And thus, in the history of art, we ought continually to endeavour to distinguish (while except in broadest lights, it is impossible to distinguish) the work of religion from that of superstition, and the work of reason from that of infidelity. Religion devotes the artist, hand and mind, to the service of the gods; superstition makes him the slave of ecclesiastical pride, or forbids his work altogether, in terror or disdain. Religion perfects the form of the divine statue, superstition distorts it into ghastly grotesque. Religion contemplates the gods as the lords of healing and life, surrounds them with glory of affectionate service, and festivity of pure human beauty. Superstition contemplates its idols as lords of death, appeases them with blood, and vows itself to them in torture and solitude. Religion proselytises by love, superstition by war; religion teaches by example, superstition by persecution. Religion gave granite shrine to the Egyptian, golden temple to the Jew, sculptured corridor to the Greek, pillared aisle and frescoed wall to the Christian. Superstition made idols of the splendours by which Religion had spoken: reverenced pictures and stones, instead of truths; letters and laws, instead of acts, and for ever, in various madness of fantastic desolation, kneels in the temple while it crucifies the Christ.

On the other hand, to reason resisting superstition, we owe the entire compass of modern energies and sciences; the healthy laws of life, and the possibilities of future progress. But to infidelity resisting religion (or which is often enough the case, taking the mask of it), we owe sensuality, cruelty, and war, insolence and avarice, modern political economy, life by conservation of forces, and salvation by every man's looking after his own interests; and, generally, whatsoever of guilt, and folly, and death, there is abroad among us. And of the two, a thousand-fold rather let us retain some colour of superstition, so that we may keep also some strength of religion, than comfort ourselves with colour of reason for the desolation of godlessness. I would say to every youth who entered our schools—Be a Mahometan, a Diana-worshipper, a Fire-worshipper, Root-worshipper, if you will; but at least be so much a man as to know what worship means. I had rather, a million-fold rather, see you one of those "quibus hæc nascuntur in hortis numina," than one of those quibus hæc *non* nascuntur in cordibus lumina; and who are, by everlasting orphanage, divided from the Father of Spirits, who is also the Father of lights, from whom cometh every good and perfect gift.

"So much of man," I say, feeling profoundly that all right exercise of any human gift, so descended from the Giver of good, depends on the primary formation of the character of true manliness in the youth—that is to say, of a majestic, grave, and deliberate strength. How strange the words sound; how little does it seem possible to conceive of majesty, and gravity, and deliberation in the daily track of modern life. Yet, gentlemen, we need not hope that our work will be majestic if there is no majesty in ourselves. The word "manly" has come to mean practically, among us, a schoolboy's character, not a man's We are, at our best, thoughtlessly impetuous, fond of adventure and excitement; curious in knowledge for its novelty, not for its system and results; faithful and affectionate to those among whom we are by chance cast, but gently and calmly insolent to strangers: we are stupidly conscientious, and instinctively brave, and always ready to cast away the lives we take no pains to make valuable, in causes of which we have never ascertained the justice. This is our highest type—notable peculiarly among nations for its gentleness, together with its courage; but in lower conditions it is especially liable to degradation by its love of jest and of vulgar sensation. It is against this fatal tendency to vile play that we have chiefly to contend. It is the spirit of Milton's Comus; bestial itself, but having power to arrest and paralyse all who come within its influence, even pure creatures sitting helpless, mocked by it on their marble thrones. It is incompatible, not only with all greatness of character, but with all true gladness of heart, and it developes itself in nations in proportion to their degradation, connected with a peculiar gloom and a singular tendency to play with death, which is a morbid reaction from the morbid excess.

A book has lately been published on the Mythology of the Rhine, with illustrations by Gustave Doré. The Rhine god is represented in the vignette title-page with a pipe in one hand and a pot of beer in the other. You cannot have a more complete type of the tendency which is chiefly to be dreaded in this age than in this conception, as opposed to any possibility of representation of a river-god, however playful, in the mind of a Greek painter. The example is the more notable because Gustave Doré's is not a common mind, and, if born in any other epoch, he would probably have done valuable (though never first rate) work; but by glancing (it will be impossible for you to do more than glance) at his illustrations of Balzac's "Contes Drolatiques," you will see further how this "drolatique," or semi-comic mask is, in the truth of it, the mask of a skull, and how the tendency to burlesque jest is both in France and England only an effervescence from the *cloaca maxima* of the putrid instincts which fasten themselves on national sin, and are in the midst of the luxury of European capitals, what Dante meant when he wrote "quel mi sveglio col puzzo," of the body of the Wealth-Siren; the mocking levity and mocking gloom being equally signs of the death of the soul; just as, contrariwise, a passionate seriousness and passionate joyfulness are signs of its full life in works such as those of Angelico, Luini, Ghiberti, or La Robbia.

It is to recover this stern seriousness, this pure and thrilling joy, together with perpetual sense of spiritual presence, that all true education of youth must now be directed. This seriousness, this passion, this universal human religion, are the first principles, the true roots of all art, as they are of all doing, of all being. Get this *vis viva* first and all great work will follow. Lose it, and your schools of art will stand among other living schools as the frozen corpses stand by the winding stair of the St. Michael's Convent of Mont Cenis, holding their hands stretched out under their shrouds, as if beseeching the passer by to look upon the wasting of their death.

And all the higher branches of technical teaching are vain without this; nay, are in some sort vain altogether, for they are superseded by this. You may teach imitation, because the meanest man can imitate; but you can neither teach idealism nor composition, because only a great man can choose, conceive, or compose; and he does all these necessarily, and because of his nature. His greatness is in his choice of things, in his analysis of them, and his combining powers involve the totality of his knowledge in life. His methods of observation and abstraction are essential habits of his thought, conditions of his being. If he looks at a human form he recognises the signs of nobility in it, and loves them—hates whatever is diseased, frightful, sinful, or *designant* of decay. All ugliness, and abortion, and fading away; all signs of vice and foulness, he turns away from, as inherently diabolic and horrible; all signs of unconquered emotion he regrets, as weaknesses. He looks only for the calm purity of the human creature, in living conquest of its passions and of fate. That is idealism; but you cannot teach any one else that preference. Take a man who likes to see and paint the gambler's rage; the hedge-ruffian's enjoyment; the debauched soldier's strife; the vicious woman's degradation;—take a man fed on the dusty picturesque of rags and guilt; talk to him of principles of beauty! make him draw what you will, how you will, he will leave the stain of himself on whatever he touches. You had better go lecture to a snail, and tell it to leave no slime behind it. Try to make a mean man compose; you will find nothing in his thoughts consecutive or proportioned—nothing consistent in his sight—nothing in his fancy. He cannot comprehend two things in relation at once—how much less twenty! How much less all! Everything is uppermost with him in its turn, and each as large as the rest; but Titian or Veronese compose as tranquilly as they would speak—inevitably. The thing comes to them so—they see it so—rightly, and in harmony: they will not talk to you of composition, hardly even understanding how lower people see things otherwise, but knowing that if they *do* see otherwise, there is for them the end there, talk as you will.

I had intended, in conclusion, gentlemen, to incur such blame of presumption as might be involved in offering some hints for present practical methods in architectural schools, but here again I am checked, as I have been throughout, by a sense of the uselessness of all minor means, and helps, without the establishment of atrue and broad educational system. My wish would be to see the profession of the architect united, not with that of the engineer, but of the sculptor. I think there should be a separate school and university course for engineers, in which the principal branches of study connected with that of practical building should be the physical and exact sciences, and honours should be taken in mathematics; but I think there should be another school and university course for the sculptor and architect in which literature and philosophy should be the associated branches of study, and honours should be taken *in literis humaniribus*; and I think a young architect's examination for his degree (for mere pass,) should be much stricter than that of youths intending to enter other professions. The quantity of scholarship necessary for the efficiency of a country clergyman is not great. So that he be modest and kindly, the main truths he has to teach may be learned better in his heart than in books, and taught in very simple English. The best physicians I have known spent very little time in their libraries; and though my lawyer sometimes chats with me over a Greek coin, I think he regards the time so spent in the light rather of concession to my idleness than as helpful to his professional labours.

But there is no task undertaken by a true architect of which the honourable fulfilment will not require a range of knowledge and habitual feeling only attainable by advanced scholarship.

Since, however, such expansion of system is, at present, beyond hope, the best we can do is to render the studies undertaken in our schools thoughtful, reverent, and refined, according to our power. Especially, it should be our aim to prevent the minds of the students from being distracted by models of an unworthy or mixed character. A museum is one thing—a school another; and I am persuaded that as the efficiency of a school of literature depends on the mastering a few good books, so the efficiency of a school of art will depend on the understanding a few good models. And so strongly do I feel this that I would, for my own part, at once consent to sacrifice my personal predilections in art, and to vote for the exclusion of all Gothic or Mediæval models whatsoever, if by this sacrifice I could obtain also the exclusion of Byzantine, Indian, Renaissance-French, and other more or less attractive but barbarous work; and thus concentrate the mind of the student wholly upon the study of natural form, and upon its treatment by the sculptors and metal workers of Greece, Ionia, Sicily, and Magna Græcia, between 500 and 350 B.C. but I should hope that exclusiveness need not be carried quite so far. I think Donatello, Mino of Fiesole, the Robbias, Ghiberti, Verrocchio, and Michael Angelo, should be adequately represented in our schools—together with the Greeks—and that a few carefully chosen examples of the floral sculpture of the North in the thirteenth century should be added, with especial view to display the treatment of naturalistic ornament in subtle connection with constructive requirements; and in the course of study pursued with reference to these models, as of admitted perfection, I should endeavour first to make the student thoroughly acquainted with the natural forms and characters of the objects he had to treat, and then to exercise him in the abstraction of these forms, and the suggestion of these characters, under due sculptural limitation. He should first be taught to draw largely and simply; then he should make quick and firm sketches of flowers, animals, drapery, and figures, from nature, in the simplest terms of line, and light and shade; always being taught to look at the organic, actions and masses, not at the textures or accidental effects of shade; meantime his sentiment respecting all these things should be cultivated by close and constant enquiry into their mythological significance and associated traditions; then, knowing the things and creatures thoroughly, and regarding them through an atmosphere of enchanted memory, he should be shown how the facts he has taken so long to learn are summed by a great sculptor in a few touches; how those touches are invariably arranged in musical and decorative relations; how every detail unnecessary for his purpose is refused; how those necessary for his purpose are insisted upon, or even exaggerated, or represented by singular artifice, when literal representation is impossible; and how all this is done under the instinct and passion of an inner commanding spirit which it is indeed impossible to imitate, but possible, perhaps, to share.

Perhaps! Pardon me that I speak despondingly. For my own part, I feel the force of mechanism and the fury of avaricious commerce to be at present so irresistible, that I have seceded from the study not only of architecture, but nearly of all art; and have given myself, as I would in a besieged city, to seek the best modes of getting bread and water for its multitudes, there remaining no question, it seems to me, of other than such grave business for the time. But there is, at least, this ground for courage, if not for hope: As the evil spirits of avarice and luxury are directly contrary to art, so, also, art is directly contrary to them; and according to its force, expulsive of them and medicinal against them; so that the establishment of such schools as I have ventured to describe—whatever their immediate success or ill success in the teaching of art—would yet be the directest method of resistance to those conditions of evil among which our youth are cast at the most critical period of their lives. We may not be able to produce architecture, but, at the least, we shall resist vice. I do not know if it has been observed that while Dante rightly connects architecture, as the most permanent expression of the pride of humanity, whether just or unjust, with the first cornice of Purgatory, he indicates its noble function by engraving upon it, in perfect sculpture, the stories which rebuke the errors and purify the purposes of noblest souls. In the fulfilment of such function, literally and practically, here among men, is the only real use or pride of noble architecture, and on its acceptance or surrender of that function it depends whether, in future, the cities of England melt into a ruin more confused and ghastly than ever storm wasted or wolf inhabited, or purge and exalt themselves into true habitations of men, whose walls shall be Safety, and whose gates shall be Praise.

Professor Donaldson (responding to the invitation of the President,) said—He was taken by surprise in being called upon to open the discusssion after such a paper. He was lost in the vast variety of imagery, the noble thoughts, the beauty of rhetoric, and the enthusiasm of feeling, which distinguished the essay they had just heard. There was one sentiment expressed in it with which he cordially agreed: that was the desire for the union of sculpture with architecture—to his mind an essential point, which he had always advocated to the utmost of his power. He had, on previous occasions, remarked, with regard to the British Museum, that, although a building of much promise, and containing the elements of great beauty, the absence of appropriate sculpture from the exterior deprived it of much of the effect of which it was capable, and which, doubtless, had been intended by the architect. It was the want of feeling in the masses in this country, to which the lecturer had alluded, which deprived architecture of much of its grandeur and beauty. And he might say the niggardly feeling of the Government in respect to sculpture was a public disgrace to the country. For his own part he would not confine himself, as Mr. Ruskin had done, to sculpture as essential to architecture, for he would include painting also; and the three sister arts should go hand in hand to produce perfect expression of feeling as to their art. Allusion had been made to the architecture of this city as not being capable of producing full impressions, from the absence of noble avenues and streets; but they found under brighter suns—in Venice, in Genoa, and in Rome—how beauties were produced even in the absence of noble avenues and streets. They found, huddled together, narrow streets producing grandeur, but wanting in that magnificence now so well displayed in the boulevards formed by the Emperor of the French. They admired the noble avenues he was creating. ("No, no.") He could not but suppose they had been at Paris, at Lyons, at Marseilles, and other cities of France, and had seen the revolution, which had been produced merely by the enlargement, under the inspiration of the Emperor, of some most magnificent lines of streets. Lyons itself, within his own recollection, was a confused mass of irregular buildings, strictly utilitarian for the purposes of a manufacturing town. The present results of opening up new thoroughfares rendered it worthy of being the capital of a great empire. The city had been pierced from end to end, and now displayed its many monuments of great beauty. He only wished we had the same advantages of public spirit in this city in the opening out of noble avenues, and then we could compete in architectural effect with our continental neighbours. He recollected, upon the formation of Regent-street, in the reign of George IV., when Prince Regent, what a different aspect it gave to that quarter of London. It was the first of that kind of public improvement introduced here. In mentioning the operations in France, he did so to encourage ourselves to pursue a like course with like results. There were other feelings, moral and poetic, upon which Mr. Ruskin had dilated; but they touched so high a chord, they appealed to feelings of so lofty a nature, that it was impossible to give at once expression to those emotions, which were called forth by such a theme so powerfully treated. It required the seclusion of the study and the calmness of more deliberate consideration, greater than could be given in the mere hearing it delivered. There was so much of beauty and instruction in that composition, that he begged to propose a cordial vote of thanks to Mr. Ruskin for his learned and valuable paper.

Mr. George Edmund Street, Vice-President, said his own feelings were just such as had been expressed by their excellent late President, Professor Donaldson, in reference to venturing to say a word after what they had heard from the lecturer; and the more so because he confessed he could not help feeling, in many respects, that he did not quite agree with the views which had been so eloquently brought before them. He confessed that, on several points, he feared he might have misunderstood Mr. Ruskin, and, therefore, if so in his own case, that gentleman might be misunderstood by the world. On the question of the naturalistic treatment of sculpture, for instance, he had educated himself very much upon the system which Mr. Ruskin had himself argued for of old. To use his own words, what is required of architectural sculptors is, that their work should be a noble abstraction of nature, not a mere imitation of natural forms in the crude sense of the term; not the mere reproducing of the outline of a leaf or of a flower. Now, what he understood by this abstraction of form was just that which characterized the treatment of foliage by the 13th century sculptors. In their work the essence of the natural forms, of growth, of curve, of outline, was preserved, and by the hand of the artist brought into subservience to architectural work. To illustrate the misfortune which attended the mere imitation of natural forms, he would take, as an example, the work of some of the workers in metal at the present day, because it seemed to him that they had sinned more than most men in this respect. What is their system? They took a number of thin plates of iron, cut them out in exact imitation of natural forms in some soft material which does not require hammering—called malleable iron, he supposed (because it never required to be hammered); they twisted them about, and so got a sort of bad imitation of natural growth; these they painted all sorts of strange colours, and called the result 'artistic' and 'naturalistic.' He, on the contrary, felt inclined to call it the most odious sort of art the world had ever seen. Again, he felt so strongly the evils which architecture suffered at the present day from the manner in which many modern buildings were covered with ornament designed in this way, without any real thought, that he could almost wish that an Act of Parliament were passed prohibiting all sculptural ornament on our buildings for the next ten years. It is probable that then men would study form and ancient work a little more, and so have more chance of mastering the real elements of the art of architecture than they had now, when they were carried off from architecture to the almost exclusive consideration of collateral subjects. Feeling this very strongly, and that many of the noblest buildings in England, as well as in the rest of the world, were perfect in form and in character, and in the impression they produce on the mind, without any use of sculpture at all; feeling, moreover, that more sculpture was being introduced now than ever the world saw before, he felt that the enthusiastic recommendation of this study of nature required to be received with some caution. What they wanted was moderation and self-restraint, without which no great effects could be obtained in architecture. Then, again, on the subject of superstition, he was rather at issue with Mr. Ruskin, inasmuch as the 19th century appeared to him, in many respects, the most superstitious century he ever heard of, with the misfortune that its superstitions were of the most extraordinary kind; superstition of mere imitation, of sham fronts in building, of false construction, and of tricks in building which they never saw in such excess before. He thought the least superstitious age was that in which the greatest individuality marked men's works, and in which the best artists were produced. Feeling this, he would say, at the same time, how great was the debt they owed to Mr. Ruskin for what he had told them to-night, because the tendency of his remarks was to suggest to young artists and those who were still studying, the necessity of a religious feeling about art, and that enthusiasm without which no art could be good; and he believed fully that success in their art was just as possible now as in any century before, to those who did their work honestly and enthusiastically; feeling this, he had great pleasure in seconding the vote of thanks to Mr. Ruskin for the admirable lecture he had favoured them with.

Professor Donaldson remarked that his friend, Mr. Ruskin, had been extremely minute in two or three instances of definitions in his paper. He thought they should draw the line between sculpture and carving. There was a strong distinction between the two. They could, in his opinion, hardly have too much sculpture, but they might have a great deal too much carving.

Mr. Street wished to utter a short protest against the praise which had been bestowed upon the modern French system of architecture. There was danger in any system of education which treated it as always uniform for all men, which took a man out of that original dependence upon self, and contempt for mere traditions which always marked the greatest artists. He thought no such system of education would end otherwise than it did in France. They learnt from a paper read before them a fortnight ago that in France everybody was led into one beaten track. There was the most elaborate system of architectural education, but the result did not impress him as being satisfactory. He used to love Paris very much, but now every year he found his love grow less, and he felt very much the same about Lyons. If there was one town more than another which was charming to an architect it was Genoa, where there was only one street in the town more than half the width of this room—where the streets were mere alleys, but in which they felt the power and the force of architecture more than in the broadest avenues of Paris.

Professor Kerr, Fellow, wished to contribute his share in the acknowledgment of the great eloquence and imagination which had been displayed in the lecture of their eminent friend. At the same time, though he was sure no professional architect present would think it incumbent upon him to judge an amateur's argument on such an occasion too rigidly, yet he would venture to say Mr. Ruskin would be himself distressed if he thought practical men hesitated to express their feelings as to the true effects of his doctrine on the profession in which he took so great an interest; and, therefore, as that gentleman had, with such good purpose, theorised on architecture generally in many views of the art, he would suggest to him one other view which he might take of it with much practical benefit. There were chiefly two principles which the able lecturer had laid before them. The one was very easily intelligible, viz., that architecture ought to be associated more than it is with sculpture. By sculpture it was plain, as several speakers had pointed out, he meant what they called carving technically. Of course it was sculpture in the high sense of which he had spoken. He would make such carving of that high character of art which placed it on a level with sculpture. So far, then, as this first point went, it was a mere question partly of taste, and partly of possibility how far an architect could carry out the principle. But this was not the chief doctrine which the lecturer had developed. There was another idea which he and others had been elaborating for many years past. It was in some degree vaguely indicated when he stated that he always considered architecture, painting, and sculpture, to be *one*. But another item must be added to the combination. The real doctrine taught was, that architecture, sculpture, painting, *and poetry*, are one; and that was the principle which, although argued with the best intentions, produced, in his opinion, infinite detriment to architecture. He would give a ready illustration of this. Mr. Ruskin said something to the effect that he was sick of art: he said that during the last fifty years there had been more philosophy expended upon art than in all the centuries before. [Mr. Ruskin: In writings upon art.] Yes; but writing and speaking ran in the same channel. He averred, also, that it produced no effect upon the public, and this they all would admit. But what were the consequences of that gentleman's own artistic philosophy upon himself—the philosopher? That he was sick and tired of such poetic art, and had turned in despair to prosaic political economy. Now, he wanted him to be sick of *poetical architecture*, and to turn to the art of *building architecture*. Twenty years ago he (Professor Kerr) held identically the same views which that gentleman had set forth, and expressed them, to similar purpose, although with a very different degree of skill; but he had grown out of them by twenty years of practical work; and he could not help thinking that if they were to set Mr. Ruskin up as an architect in an office in Whitehall, and gave him plenty of work to do, he would change his opinions as much in twenty months as he himself had in twenty years. It was most dangerous to say that there was anything in common between the poet and the architect. Practical architects ought to encourage each other, and to encourage their youth, to dissociate, as much as they possibly could, from architecture, all such romantic and visionary notions. Architects, primarily, were professional men. Part of their profession was art, of course. He used to say it was all art once, and took it as a sign of weak intellect when people attempted to gainsay that proposition; but he argued now for the practical character of the architect as a professional man—a servant of the public for the efficient design of buildings—precisely like the engineer. There was no line to be drawn between the architect and engineer except the division of one particular class of practice from another. There was nothing in the engineer's work which was incapable of being made artistic. Architecture, as an art, was the beautifying of that which is constructive; but, first and foremost, the subject must be constructive; therefore the architect, as the servant of the public in this utilitarian world, must first look at the requirements of building in a manner alone—not merely the technicalities, but the science in all its bearings; then, having mastered this basis of his business, just as the painter must master the power of drawing, the mode of combining colours, and the principles of grouping forms,—having placed himself on the only safe, practical ground by a thorough knowledge of plan and building, then, and not till then, was he entitled to speak about that beauty which is the finishing grace of such knowledge. To show how far architectural philosophy had benefited architecture in this country, he would venture to say it was in the City of London alone that the architect was properly appreciated. He would not forget to acknowledge that the clergy took a certain interest in it, but this was connected with other motives, and the prosaic City of London was the place where architecture, at the present moment, was most cordially encouraged. He thought the most pernicious influence to which architecture could be subjected was that miscellaneous, so-called philosophical discussion; and the sooner this philosophical era was closed, and a new and practical era begun, the better. It was on this theory of architecture—the prosaic and practical view of the subject—that he would like to read a treatise from Mr. Ruskin's fascinating pen. He was sure, moreover, that that accomplished writer would derive more satisfaction from it than from any effort in political economy, which would only lead him into greater and more contentious criticism than ever, while this could do no more than provoke the criticism of architects, who would at least deal leniently with their friend.

Mr. John P. Seddon, Hon. Sec., said he thought there could be no better justification of Mr. Ruskin's desponding views as to the present condition of things than that such should be the views to which Professor Kerr had been reduced after a few years' practice in the City of London, according to the somewhat *naive* confession he had just made: and in no place, probably, did the majority of buildings erected display a more utter abnegation of, or less endeavour to follow out, the noble principles advocated in Mr. Ruskin's published works than in the said City of London. Notwithstanding the graceful apology that Mr. Ruskin had made for his previous writings, he (Mr. Seddon) felt that the profession owed him a deep debt of gratitude for them, and they had now to express their further thanks for many valuable suggestions in the paper just read relating to the education of architects; but he could not help feeling that there was one class of men to whom reference had been made, who, if they followed out the views laid down for them in it, would have to be most seriously pitied—he spoke of the engineers—although they did not need any inducement to ignore art as part of their preliminary studies; but why one whole class of important buildings should be turned over to men who were not to be trained even to attempt to make them artistic he was at a loss to conceive. Unfortunately building was getting more and more into the hands of such, and it was that which led many of those present not to agree with Professor Donaldson in his views as to the improvements in Paris. That there were improvements in many respects could not be denied, but he himself agreed with Mr. Street in preferring the ancient picturesque "higgledy-piggledy" system infinitely to the soulless monotony which hitherto had been the result of the "improvements" referred to. Still it was impossible to ignore the fact that they could not go back to the "higgledy-piggledy" system again. What was incumbent upon them as architects to do was to set their own mark upon the new system, and in some way to render artistic those works which at present partook too exclusively of the character of engineering, and too many of which, as Mr. Ruskin had described them, were monstrosities of ugliness. But every architect in practice must feel that there is in the present day, generally speaking, if not an antagonistic, at any rate an apathetic feeling with regard to art. Really what became necessary for the architect to do now was to get the bit into his mouth and keep it there, and make his work artistic in spite of such apathy, and then, when people thus had put before them an art of a pleasant and genial character, they would take pleasure in it. The few opportunities the public has had of late have been much admired—many of the new buildings of Oxford were so—and men thought and talked much about them; and in his opinion there were some remnants of a healthy feeling for art existing which architects should endeavour to encourage. Grounds though there might be for Mr. Ruskin's desponding views, it was not for them to give way to them; their clear duty, at any rate, was to battle for the right under the circumstances in which they found themselves, and he trusted they might still count upon the aid of Mr. Ruskin's eloquence, which he believed had proved of great practical value, and still would do so, if he could be prevailed upon not to withdraw himself from the contest in the manner which none present could have heard, without regret, to be his intention.

MR. WM. WHITE, Fellow, said it was evident there had been several modes of understanding what the lecturer had said this evening, and he must say he had understood him in a different manner from what had been expressed by preceding speakers. It seemed that the great thing which Mr. Ruskin endeavoured to bring before them and insist upon was, that for vitality and progress in art they must go to work *ab initio;* that they must work up from the very lowest organization both of art and of architecture, to the highest. They must not fall back by way either of imitation or eclecticism upon even the finest specimens which they found in mediæval or other art, nor must they attempt to work backwards from these for the production of a new phase of art. That, he thought, would be found to be the gist of the lecture as regards the main branch of the subject, and that the same would almost apply to the different branches of art as connected with engineering. It seemed to him most essentially true (without entering upon the question how far the two might or might not be combined in practice) that the education of engineers, as engineers, must be essentially different from that of architects as architects: the one being based upon the laws of forces, and the other upon the laws of beauty. And it appeared more especially in this respect to be so, that in all nature the most beautiful objects, as he thought he had learnt from Mr. Ruskin's writings, were those which apparently were the least to be regarded as utilitarian. He thought the lecturer had brought out those several points most admirably, and he hoped, as their late President had said, they would look through them at home, and consider them quietly in their studies.

MR. M. DIGBY WYATT (responding to the President's invitation) said he had been thinking, while listening to the brilliant orator of the evening, how best the sensation which had been created in his brain by Mr. Ruskin's animated paper, could be expressed by a single adjective. He had thought of describing his own mind as "overcome," "stupified," "dazzled," "lost," &c.; but none of those epithets would quite do, and ultimately he had come to the conclusion that the French word "*ébloui*" was the only term which could adequately define the mixed state of surprise, delight, and general acute excitement in which the fiery essay the meeting had just heard had left him. Within the compass of a brief discourse the accomplished lecturer had handled nearly the whole scope of human philosophy, as well as of the art which it was their privilege to practise, tracing, as far as practicable, the infinite ramifications which he supposed to connect the material elements of the successful practice of architecture with our moral natures. He himself could not but feel that it was in the too confident assumption of such a close moral relationship that Mr. Ruskin had been propounding a practical fallacy, and one far more confusing and deleterious than could result from his supposing the bases of art to be identical with those of poetry, according to the objection to his views which had been raised by Professor Kerr. He (Mr. Digby Wyatt) would willingly believe, as Plato and others had suggested, that there existed an analogy between moral and physical beauty; and with such a perfect humanity as Shelley and other poets had dreamt of, there might be an identity; but in "these degenerate days" morality might be perfectly beautiful without its following that beauty must necessarily be perfectly moral. His own faith in Mr. Ruskin's theory that good men only could do good—*i. e.*, beautiful—work in any department of art, was greatly shaken by his recollection of the nature of the lives of the artists—Titian and Correggio—whose works had been held forth as models never to be destroyed—never to be less admired. When he thought of what those men had left behind them, he could scarcely conceive that the moral —*i. e.*, anti-sensual—element was so indispensable to the production of even conventional beauty in art, as Mr. Ruskin would have them to believe. Although he thoroughly endorsed the enthusiastic advice to all artists to be pure, and good, and noble, still he did not think the making good, pure, and noble men was certain to eventuate in fine art, which had indeed flourished with peculiar vigour in periods when the personal depravity of both patrons and producers was at a rare acmé of debasement. The art practised by the members of this Institute could not be studied and mastered on moral grounds alone. It was built up of the natural wants and yearnings of fallible men; it dealt with material nature in subordination to the laws of physics, while at the same time it ministered, and was pledged, to the creation of delight through form and colour, to the displacement of painful association and sensations altogether. It was an art specially cumulative, dependent on foregone conclusions, experiences, and studies through hundreds of years; therefore it was that they could not, with advantage, revert now to an Age of Innocence, or put themselves back into the position of infancy. For each man to begin *ab initio*, as had been suggested by Mr. White, would be to waste life, and fall a victim in an insane struggle with time. In all the history of art, every man who had succeeded had taken up his life's practice at the stage in which he found it, and had brought to bear upon that particular condition of things the interest and special functions of his genius. It was not by going back into an infantine condition that they could hope, within the narrow scope of the limits, in point of duration, of human existence, to master the principles that led to success. The materials for study which grew up spontaneously around every man, were enormous alike in mass, confusion, and diffusion; and the great difficulty which the architect who desired to do well must feel, was, "How can I ever learn all my lesson?" That lesson was spread out before him in thousands of pages. The question was, Which were to be scanned—which neglected: which mastered, and which absorbed by him. He must acquire manual dexterity as an artist on the one hand, and cultivate his imagination, while he could not neglect science on the other. If he did the latter he would be hampered in practice by so many and such overwhelming difficulties, that he would become bewildered. Every man who yearned to do better than he had previously done in every way could not but long for some strong hand, some potent voice of sympathy to help him into some purer atmosphere, where he might breathe more freely, and see his way more clearly. If he (Mr. Digby Wyatt) could but realise the verity of, and grasp, such help, feeling any reasonable expectation that it would lead him into such an atmosphere in which the material could be subordinated to the spiritual, and the impure to the pure, he would clutch at it with delight; but, alas! lovely as had been Mr. Ruskin's picture of an El Dorado of Art, it was too poetical to feel that it had in it any real promise of hope and success, at least for architects with their daily bread to earn. He was delighted by the vision the magician had raised; he was overpowered by his rhetoric, his lofty eloquence, and by his affluence of brilliant imagery. For these at least, he could feel great and sincere admiration and gratitude; and for this, at least, and for his generous sympathy with the studies and labours of the architect, he would most heartily second the vote of thanks which had been already proposed to Mr. Ruskin.

Rev. Charles Merivale, B.D., said he rose in obedience to the command of the President, who, being newly in the chair, had exercised his authority with a little more severity than probably he would do when he had held that position longer. He had, however, very little to say on the subject for he was a stranger to architecture, and, perhaps, still more so to poetry, and most of all to painting. He could only respond to all he had heard from those who had preceded him as to the great admiration and delight with which he had heard the eloquent and burning words which Mr. Ruskin had addressed to them, and given them food for thought for a long time to come. To point out his individual feeling in reference to what had been said about the grand effects produced by modern architecture in Paris and other places, of which also they might see specimens in their own city, he wished to protest against making great spaces to produce effect for buildings which were never intended by their architects. He could not but feel regret whenever he heard of new schemes, on a grand scale, as in this city, for instance, and when people said, "There is a grand building: it ought to be brought forward." It was placed there because the architect knew it was not going to be seen except from a certain locality. They had seen instances in which buildings considered large, and of some importance, had been dwarfed by being brought too prominently forward. St. Martin's-in-the-fields was a fine building, and, when cooped up in a narrow lane, came upon them with a grand effect.—now it was lost; and so with respect to the talk about clearing the space around St. Paul's, there was danger that a similar effect might be produced as regards that noble structure.

Mr. JOHN W. PAPWORTH, Fellow, remarked that there were occasions on which gentlemen possessing the facility of speaking might be excused for not saying a word; while there were also opportunities on which the expression or non-expression of an opinion became the exponent of the trust reposed in the results of the deliberations of a life-time. On the latter it became absurd to avoid responsibility by the plea of the insignificance of one's position; and he therefore was anxious to record a protest (which in far better language than he could summon to his lips had been expressed by Mr. M. D. Wyatt upon grounds very similar to some of those which he held) against several of the opinions propounded by the lecturer. Although he fully believed that from time to time Mr. Ruskin had quite supposed that what he wrote was truth, yet as Mr. Papworth had never felt justified in giving an unqualified adhesion to those pages, and had never been able to convince himself that he ought to concur in that gentleman's doctrines as to the education of artists, more especially of architects, he requested to be allowed to state on his own behalf, and certainly on the behalf of some members not present, that an acquiescence in the proposed vote of thanks did not imply approbation of all the eloquent discourse which had just been partly read and partly extemporized in such an able manner.

The PRESIDENT said before putting the resolution of a vote of thanks to Mr. Ruskin he would sum up the discussion in a few words. First, in reference to Professor Kerr's spirited allusion to the association of poetry with architecture he would note that it had been said by some one that "prose is thought expressed in the best words, while poetry is thought expressed in the best words, and each word in the best place." So to apply that practically, he would say engineering was the using of the best materials and the best construction, and architecture was the using the best materials and the best construction in the best form. With this parallel he left them to draw the inference that architecture and poetry had a little more to say to each other than Professor Kerr with his strong common sense but de-poeticised imagination was willing to admit. Now to come to the paper. Every one who had spoken this evening had characterized it as a wonderful specimen of rhetoric, a grand argument boldly conceived and well delivered, but he must say there was one under-current which their gifted friend would be the first to feel if it were brought before him, and which in fact he had been the first to acknowledge in the last paragraph of his paper, that to his mind went far, not indeed to destroy its effect, but to suspend its practical power of usefulness. This feeling, natural as it was to a highly organized and sensitive mind, was yet one which it was their duty to combat against. In one word, it was the feeling of "Who will show us any good?" It was a sort of "end-of-the-world-is-coming idea," which ran through people's minds more than they were generally aware of. For his own part, taking a contrary side, he ventured to express the belief that it was the duty of those who had their part to play in the world's progress to throw off such feelings, and to believe in the perpetuity of the great sources of hope and improvement for the coming ages. Granting to the fullest extent the bad taste of much of the architecture which met us up and down our towns in the buildings plastered over with leaves and beasts, heads, and every kind of fantastic incongruity, yet they had Baker Street and Harley Street to place in the other scale, and they might reasonably say that the present bad architecture was the recoil from the dreariness of the no-architecture of those doleful purlieus. Putting the case in this light, he called on his friend Mr. Ruskin to cheer up, and recollecting the defence of primitive ugliness which he had just uttered, to go into our streets and strive to make there the discovery that we were after all, it might be, in that innocent and infantile state of art where ugliness was pardoned for the sake of its good intentions and future promise of which he had been speaking. If he would but look at things in this light he would recognize great prospects for his own principles in the future, which he was now too modest and too sensitive to recognize for himself. One protest more he had to make while otherwise echoing the applause so deservedly offered to that eloquent paper. It was a protest against one passage in the discourse, which was after all, he felt sure, only one of those figures of speech which great orators are apt to use without themselves believing in what they say, or even wishing their auditors to give their own credence to the brilliant trope. Mr. Ruskin in one passage warmed up to such an extent that he offered to throw over all that age of art since art had become Christian which he thought really good, on condition that somebody else threw over all those other ages of art since art became Christian which he thought not good, and for what? on condition that all united in limiting art education to that century and a half of Greek or rather Athenian refinement, when with all that was lovely and graceful in external forms, society had become elaborately corrupt in all its relations, hetæræ ruled statesmen, and philosophers went wildly astray in their consultations. He did not believe that his eloquent friend really meant what he said when he challenged his antagonists with his bold figure of speech. In conclusion, he was quite sure that the vote of thanks he had now the pleasure to submit to the meeting would be received with acclamation.

The vote of thanks was carried unanimously.

Mr. **Ruskin**, in acknowledging the high compliment paid him, said he would detain the meeting but a few minutes, but he felt he ought to make some attempt to explain what he had inefficiently stated in his paper; for there was hardly anything said in the discussion in which he did not concur: the supposed differences of opinion were either because he had ill-expressed himself, or because of things left unsaid. In the first place he was surprised to hear dissent from Professor Donaldson while he expressed his admiration of some of the changes which had been developed in modern architecture. There were two conditions of architecture adapted for different climates; one with narrow streets, calculated for shade; another for broad avenues beneath bright skies; but both conditions had their beautiful effects. He sympathized with the admirers of Italy, and he was delighted with Genoa. He had been delighted also by the view of the long vistas from the Tuileries. Mr. Street had showed that he had not sufficiently dwelt on the distinction between near and distant carving—between carving and sculpture. He (Mr. Ruskin), could allow of no distinction. Sculpture which was to be viewed at a height of 500 feet above the eye might be executed with a few touches of the chisel; opposed to that there was the exquisite finish which was the perfection of sculpture, as displayed in the Greek statues, after a full knowledge of the whole nature of the object pourtrayed; both styles were admirable in their true application—both were "sculpture"—perfect according to their places and requirements. The attack of Professor Kerr he regarded as in play, and in that spirit he would reply to him that he was afraid a practical association with bricks and mortar, would hardly produce the effects upon him which had been suggested, for having of late in his residence experienced the transition of large extents of ground into bricks and mortar, it had had no effect in changing his views; and when he said he was tired of writing upon art, it was not that he was ashamed of what he had written, but that he was tired of writing in vain, and of knocking his head, thick as it might be, against a wall. There was another point which he would answer very gravely. It was referred to by Mr. Digby Wyatt, and was the one point he had mainly at heart all through—viz., that religion and high morality were at the root of all great art in all great times. The instances referred to by Mr. Digby Wyatt did not counteract that proposition. Modern and ancient forms of life might be different, nor could all men be judged by formal canons, but a true human heart was in the breast of every really great artist. He had the greatest detestation of anything approaching to cant in respect of art; but, after long investigation of the historical evidence, as well as of the metaphysical laws bearing on this question, he was absolutely certain that a high moral and religious training was the only way to get good fruits from our youth; make them good men first, and only so, if at all, they would become good artists. With regard to the points mooted respecting the practical and poetical uses of architecture, he thought they did not sufficiently define their terms; they spoke of poetry as rhyme. He thanked the President for his definition to-night, and he was sure he would concur with him that poetry meant as its derivation implied—" the *doing*." What was rightly done was done for ever, and that which was only a crude work for the time was not poetry; poetry was only that which would recreate or remake the human soul. In that sense poetical architecture was separated from all utilitarian work. He had said long ago men could not decorate their shops and counters; they could decorate only where they lived in peace and rest—where they existed to be happy. There ornament would find use, and there their " doing " would be permanent. In other cases they wasted their money if they attempted to make utilitarian work ornamental. He might be wrong in that principle, but he had always asserted it, and had seen no reason in recent works for any modification of it. He thanked the meeting sincerely for the honour they had conferred upon him by their invitation to address them that evening, and for the indulgence with which they had heard him.

Mr Davy.

137. Long Acre

J Ruskin

J Ruskin.

Bedgebury Park,
Cranbrook.

Oct 27
1865

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A J B Beresford Hope

DISCUSSION ON MR. GEORGE R. BURNELL'S PAPER ON THE PRESENT TENDENCIES OF ARCHITECTURE AND ARCHITECTURAL TEACHING IN FRANCE,

At the Ordinary General Meeting of the Royal Institute of British Architects, May 29th, 1865.

A. J. B. Beresford-Hope, President, in the Chair.

The President said, what had just fallen from Professor Donaldson very fairly led the way to this discussion. He had pointed out the evils of our hap-hazard system of no Government encouragement of architecture, while Mr. Burnell's paper, which he had had pleasure in reading, had shown them the great dangers of a centralized system of architecture.

Mr. **Edward Hall**, F.S.A., Visitor, said, when he assented to the wish of the meeting, a month ago, that he would open the discussion this evening, he rather responded to his enthusiasm, derived from a residence in Paris, for French art, than to the sense of his ability properly to introduce the subject of discussion; and it was necessary that he should explain that he might have to repeat observations that had already appeared in print; for, as might be known, he had written much, during the last our or five years, on the architecture and improvements of Paris. He could not entirely agree with the conclusions, ably summed up by Professor Kerr, and which he thought were those fairly to be ascribed to the author of the paper, viz. that the amount of centralization to be observed in France was altogether detrimental to art in architecture there. An estimate of the French architecture must be made contrastedly with our own; but, that the comparison might be fair, it was necessary that conditions should be clearly stated. No comparison should be drawn without a very careful study of the architecture of Paris in the French capital itself; and he must be excused in saying, he feared the great majority of our architects did not give that amount of study to the architecture of Paris which it deserved. He was glad to except Mr. I'Anson, and had been happy to hear his observations; and what Professor Kerr had said as to the particular merits of French architecture, was correct. It generally happened, he thought, that English architects visiting Paris, took it *en route* to some other place, as Italy, and only spent two or three days there. They knew that the Boulevart de Sebastopol had a certain importance: so they visited it; but they thus derived partial and therefore rather erroneous impressions. It must not be supposed that because enormous areas of ground were appropriated to wide boulevarts, there were not narrow streets in which there were important architectural works. Near to the Church of Ste. Clotilde, and in the streets leading out of the Champs Élysées, and out of all the boulevarts, there were works of merit, that he was afraid the majority of English architects did not see at all. To omit these from an estimate, would be as great a mistake as would be made by a Frenchman were he just now to attempt to judge of the architecture of London without having seen Lombard Street, or of the architecture of England without having seen Manchester. To treat the question raised in the paper, they must take into account many things, such as system of government, race and people, antecedents and history, climate and atmosphere. In the architecture of Paris we observed a marked taste for ornament, and for emblems and records of military glory; and the character of the art, further, was affected by the out-of-doors' life of the people, by the great dimensions of the buildings compared with our narrow frontages, and by the absence of basements lighted from street-areas. Mr. Hall then gave a *resumé* of of the statements and views in Mr. Burnell's paper, characterizing some of them as irreconcileable with one another, but approving of much that Mr. Burnell had said respecting deficiencies of the system of art-education, as well as of his recommendation of the study of science, in each country, as essential for the architect, even in the point of view of architecture as art. Before taking up the statements *seriatim*, he adverted to some advantages that the French practice of architecture had. Unquestionably there was in France a public taste for art in architecture, far beyond that which prevailed in this country, and which was promoted by the habits of the people before alluded to, or the love of looking at things that were decorative or interesting. Questions of building-improvement were largely discussed by the public. He had read the French newspapers daily; and he had observed, when any improvement was under discussion, that it was not simply considered, as in the case of a new line of street, what were the best means of getting from one part of the capital to another (though he considered in that respect the French were vastly in advance of us), but that the point was also raised of the probable art-effect of the measure, or the loss or gain to a particular monument; whilst that, on such questions, the opinions of architects were quoted and deferred to. He did not think it necessarily followed that where there was a taste for painting, there was the taste for architecture that architects would wish to exist; but it was worthy of remark, that whilst the critical notices of the Exhibition of our Royal Academy were limited to four or five numbers of *The Times*, the notices of the French Exposition, by M. Théophile Gautier, were continued in the *Moniteur* for some seventy or eighty numbers, or long after the Exhibition itself was closed. That tended to show there was a love of art in France, and a public appreciation, such as we had not here. Having alluded to the advantages that the practice of architecture had, in Paris, for the effect of buildings, in the atmosphere which allowed details to be seen and appreciated, and did not destroy them, in the magnitude of buildings and width of frontages, and in the equality of heights, as compared with our low and lofty buildings, side by side, of narrow frontages, he gave evidence showing that the influence of architects was in France far greater than in England. The writer of an article in *Bentley's Miscellany*, of November, 1861, intending to show that the influence of architects in new Paris was not what it should be, had said: "The purely speculative nature of nearly all" the building was "further proved by the circumstance that out of 814 houses built in 1854 and 1855, only 354," according to the *Revue Municipale*, "were directed by architects: the rest were constructed by the contractors themselves, on their own plans, to sell again." Now he, Mr. Hall, would ask whether the same proportion, or nearly half, of architects employed, to structures, would be found in England. In fact, wherever architecture could come into play there was an architect, as attached to the *bureau*, or to the particular building or monument. There was an architect for the Luxor Obelisk; there was one even for the statue of Henry IV; there was one, M. Hittorff, for the fountains of the Place de la Concorde. Thus when anything required to be done, in the way of repairs, it was seen to: whilst, in London, our public statues were neglected; and it had been difficult to say who was responsible for them. Contrasted with these favourable conditions of the French practice of architecture, the English practice was under disadvantages. With us there was no public appreciation of the *art* in architecture; the thing appreciated was that which was ancient, or had the semblance of antiquity; or quantity of mere work was mistaken for art. The people did not even look; but praise or dispraise was given at hap-hazard. He referred to Mr. Ruskin's criticism of the railway-bridge at Blackfriars, and to a diametrically opposite opinion in a journal of some position, as tending by the fact of the contradiction to shew that opinions were expressed in the way he had mentioned. One of the greatest disadvantages under which English architects laboured was the smoke-nuisance in our towns; and there would not be much good architecture in the Metropolis till this nuisance was done away with. It prevented our seeing the art-work that there might happen to be in buildings; it clogged up all ornamentation; and the result was difficulty in getting art to be practised as they wished to see it practised, and appreciated as they wished to see it appreciated by the people. Now, whilst opinions were being expressed unfavourably to French architecture, we should pay some attention to those by Frenchmen on our architecture.

Whilst he was in Paris, in 1861, there appeared in the *Revue Européenne*, an article by M. A. Legrelle, (the first of a series, he believed), entitled "À travers Londres," which gave some of these impressions. And he thought they should not object to hear the opinions of enlightened Frenchmen, because some blunder was made as to the importance of Leicester Square, or, as in calling Sir Christopher Wren "Sir Wren," in falling foul of our practises, which happened to be exceptional. The writer entering London, coming from France, by way of the Borough, said of what he saw,—"There reigns everywhere there an uniform and implacable ugliness . . . . Two rows of houses, exactly identical, look at one another sadly right and left. To speak truly,. the street is rather closed in by two walls pierced with windows than by two rows of houses." After mentioning the smoke-blackened brickwork, the windows *à guillotine*, and the public-houses at corners of streets, he got to the City, where still he found chiefly occasion to speak of the smoke-nuisance, and the part-begrimed and part-washed appearance of St. Paul's. Without quoting all that the writer said of the western part of London, of the monotony of the squares, of the statues, in which it was impossible to recognize the features of the hero, who "after having stood the fire of the enemies of his country during his life, was yet under the necessity of enduring the smoke of the chimneys of his country after his death," and of the absence alike of variety and of real beauty in the appearance of the buildings, Mr. Hall said it would be admitted that the opinions that were reasonably expressed of London, were at least as unfavourable as any that could be expressed of Paris. As to favourable English opinion of the domestic architecture of the latter capital, he might refer to the words of Mr. Fergusson, in his volume on the "Modern Styles of Architecture;" though Mr. Fergusson's opinion was qualified more than it might have been, had he consulted the admirable illustrations of the work of César Daly rather than those by Calliat. Mr. Hall now asked to be allowed to give a short rejoinder to the positions taken by Mr. Burnell. In the first place, he said, for the comparison and opinion to be just and accurate, the foreigner must suppose himself in the position of, and under the same influence as, the native of the country. In the works of the present empire, Mr. Hall said there was a certain unity of character, or that harmony which is served by unity of style, but not more uniformity than there is in the works of any period of celebrity; and such unity no more interfered with variety of detail, or with *art*, than did the style of the English thirteenth-century architecture. The assertion as to the so-called uniformity, and that as to the being "quite *at sea*," seemed inconsistent. So far as the centralization might dictate neglect or disregard of the local conditions, as of climate and materials, it would do wrong, and as much so in the art point of view as the economical; but so far as it might be productive of a general harmony of character or style, it would both serve *art*, and conduce to the appreciation of the art by the public. Variety of mere *style* was not desirable: such variety meant no more than the contemporaneous prevalence of a multitude of mere imitations: the moment there were distinctions to be observed, of style, the aim was still to observe those distinctions; and *art*, in which some amount of invention was an essential element, lost its due importance. The obliteration of local peculiarities of architecture was inevitable; it was a result of improved means of communication; and it might be even to be desired. No merely picturesque or antiquarian yearning should interfere with benefit to be derived by the country from the capital, or by the capital from the country. Materials brought by a railway might themselves alone, alter the physiognomy of the local architecture. Should Manchester have refused the stone that came from Yorkshire by the railways when opened, and have remained a city of brick? The disuse of the mediæval, (though it was not so complete as would be inferred from what had been said), tended to show that *art*, rather than reproduction, was the aim of the French. The style of M. Duban, as "introduced" in the earlier portion of the École des Beaux Arts, was really somewhat of the character of the fifteenth or sixteenth century Italian; and that style was not characterized by any weakness of detail: neither was there such weakness in the

Bibliothèque de Ste. Geneviève. The new portion of the École des Beaux Arts was quite different from the old; and it might deserve what had been said of it; but the general effect, there, had not a defender; the chief features of the design were condemned: yet, still, there were details of great beauty. So far from being imitated, and having led the way to anything, this late work evidently owed much to the influence of certain works that had preceded it. As to the influence of engineers upon architecture, it was bad, if detail only were considered; and on the whole it was productive of much ugliness: still it had been contended, and with some show of reason, that useful lessons just now could be derived from the "common-sense principles" of engineers; who often did well, or when avoiding details of architecture, such as they caricatured only. Mr. Burnell himself tended to an opinion in favour of engineers, as shown by his praise of the Station of the Paris and Strasburg Railway. As to the allotment of distinct duties, this led to efficient performance; and might not architecture in England be advanced by a similar system in the profession,—comprehensiveness, however, on the contrary, being the aim in the architect's education? As matter of fact, in Paris, the churches and street-elevations were produced by numerous architects, or not only by those of the municipality. The system of education was always recognized to be very defective. But in England there had been no system; and it could hardly be considered there was one at present: albeit, the scheme of the examinations, setting forth the subjects of study to be taken up by the young architect, was an immense gain. But, though the system in France was defective, the existence of the Conservatoire des Arts et Métiers, and like institutions, the enthusiasm cultivated amongst the young men in the *ateliers*, the cheapness of books, and the general atmosphere of art in which the French student lives, and the requirement of a course of geometry, constituted advantages which the English student had scarcely yet, even not forgetting the South Kensington institution, and the efforts of the Architectural Association. He said, after having paid a great deal of attention to the subject, he came to the conclusion that the state of architecture in France was more satisfactory than the state in England. The taste of the Prefect might be somewhat too much consulted; but there was no lack of originality. Mr. Burnell had mentioned the names of three or four architects who had done nothing: he, Mr. Hall, could mention the names of hundreds, who had devoted themselves to domestic architecture, who had produced works in abundance, and of the highest order of beauty. These men were unknown on this side of the channel; and their names were not included in the list of corresponding members of the Institute. He thought, a slight attention to the subject would lead them to conclusions with respect to the merits of French architecture as now practised, different from those that Mr. Burnell had laid before them.

Mr. PENNETHORNE, Fellow, said he had not had an opportunity of reading Mr. Burnell's paper, but had listened attentively to what Mr. Hall had said this evening; and rose only to express his firm conviction that architecture in this country was in a far more healthy state than it was in France. Every one looking round London at the buildings now being erected, as well as at those recently completed, must, he thought, come to that conclusion. Without mentioning the names of the architects, or criticising the buildings, and beginning south, he might point to the large club houses in Parliament Street, the Bank, and Railway Station at Charing Cross; in the north, the building in Holborn and Carey Street; the many buildings in Lombard Street and the City;—to say nothing of Manchester, Leeds, Liverpool and other cities;—and he felt sure, that as a whole, taking the like number of buildings of the like character in France, they would not equal those of England. To refer to Gothic works was unnecessary, because they were allowed to be superior to the modern Gothic works of France. English architects might have differences amongst themselves as to the best style to be adopted, and some young architects might produce works in their search after novelty of neither one style nor the other; but taking it altogether, there was an energy and an excitement about English architecture which was certain at last to raise architecture in this country to the rank of a school, or rather two schools, totally independent of each other, but both perfectly excellent. The one as good and perfect as in the times when mediæval architecture flourished; the other he believed better than the Italian, because it would rest on the principles established first by the mathematicians and architects of Egypt and Greece. In short, he believed at this moment architecture in this country was in a very manly and vigorous state, and that if it continued to progress as it had done during the last twenty years the English would become the best school of architecture in Europe.

Mr. JOHN P. SEDDON, Hon. Sec., thought it was somewhat a pity that Mr. Hall had taken the *tu quoque* line of argument on this subject, for it was of no great importance whether or not the non-architectural portion of London was worse than the modern architecture of Paris. It was too sad a fact that the majority of buildings here were left to the gloomy devices of speculating builders, whereas in France the services of the profession, such as they were, were generally employed. If a comparison were to be made between the recognised professional work in each case, then, with Mr. Pennethorne, he did not fear the result, and in his opinion the conclusions that Mr. Burnell had come to and expressed in his paper were correct ones. In examining any work representing the buildings by modern French architects, the first thing that struck him was the cleverness exhibited in the plans, but this was, according to his own experience, always succeeded by utter disappointment when the elevations founded upon them were considered, and by the feeling of surprise at its being possible that such opportunities had been thrown away, and could be treated in so bald and common-place a manner: as to the details, they were simply classic or Renaissance and water, and were truly a caution, if to be looked upon as a probable or necessary result of an academical course of instruction. There were, however, certain features about Parisian domestic buildings which he thought it would be desirable to introduce into our own, and he doubted not more would then be made of them by English architects than had been done in France. He would instance the treatment of the entrances and interior courts of houses, which afforded an admirable opportunity for pleasant effect; indeed, modern requirements were by no means necessarily antagonistic to picturesqueness, if such be really sought for; but the modern French architectural mind seemed to be utterly incapable of even appreciating that quality in the magnificent works which had come down to them from Mediæval times, and it was a sight which continually roused his indignation, to witness the manner in which all that was charming was being ruthlessly swept away from such towns as Rouen and Beauvais, to make way for "improvements," which bid fair soon to reduce them all to the same tasteless monotony as now reigned in modern Paris.

Mr. EDWARD I'ANSON, Fellow, remarked, that discuss this question as long as they would, they would never agree which was the best architecture, English or French. It was in vain to say one had only to walk from one part of London to another to see huge houses; they saw the same in France. It was also in vain to say that English architects showed more intelligence than French; he thought not. It was a matter of opinion on which they were not likely to come to a conclusion. At the same time it was satisfactory to find that some gentlemen appreciated French architecture. There was one part of Mr. Burnell's paper not touched upon, which, in itself, afforded matter for a full evening's discussion—that was the relative merit and value of the education of young French and English architects. There was a great distinction between the two. In the year 1863 he visited France in reference to an education scheme of his own, and he went to enquire into the system there; and he found the young men were almost without control from their masters; that they were concentrated in the ateliers, where the chief inducement to progress was the competition they had amongst each other, the senior members making the juniors their fags or clerks, and all combining together to work up a design; and he understood in that way the juniors were looked after by the seniors with more care and painstaking than any master could bestow; and the result was that they took the deepest interest in the works, where they only assisted as subordinates, in obtaining, as they hoped, the prize, and as they became more able draughtsmen they competed for the prizes which were the general incentives of the students. In that way he believed the young French architects were more enthusiastic and devoted to their art than most young architects in London. They knew that in the practice of an English architect's office there were no such inducements. This Institute offered some prizes, but they were not accompanied with that *eclât* and public display which distinguish the French associations—which stimulated the energies and ambition of the young men. It is well that there should be such opportunities. That was the tendency of French teaching; he need not dilate upon the tendency of the English system. In that alone there was subject for a full evening's discussion.

PROFESSOR KERR, Fellow, considered that the question adverted to by Mr. I'Anson was the real point for discussion. The Channel might be said to divide two nations, as characteristically different as might be two fields of grain, although only divided by a hedge; and any system which prevailed in the one country, however successfully, was not to be taken as suitable to be imported into the other, on account of its success in the first. Especially, any attempt to introduce into this country French centralization in the education of architects would, in his opinion, fail. He therefore thought that, for instance, the organization at South Kensington, as applied to architecture, would not succeed. He thought the system adopted in their own Institute was far preferable; the individuality of the efforts of students being stimulated by their having a definite curriculum laid down, and an examination instituted upon that basis, but no more. He thought such a system was much more to be trusted on English ground than any attempts to imitate the French system. In proof of these ideas, he quite agreed with what his friend, Mr. Pennethorne, had said, that English architecture was more bold, more manly, more vigorous, at the present moment, than the architecture of France. At the same time, he thought that English architects would find much to learn in a careful study of the practice of French architecture. There was, on the other side of the channel, an attention to *detail* worthy of imitation here. In many other matters, as well as in architecture, Englishmen claimed to have more of vigour and energy, and sometimes more of passion (in that poetic sense, which, for example, had been instanced at the last meeting of the Institute);—although it might seem strange to say that the English possessed any such enthusiasm more strongly than the French, yet it was so;—but all the while the French had a sort of steady-going discipline in the administration of the details of art which it would be well for the English architect to endeavour to acquire; and there alone, he thought, they might imitate the French system. In a word, he would introduce educationally, if possible, more careful and refined elaboration of detail, without surrendering, in general design, anything of national English individuality.

MR. ARTHUR CATES, Associate, said, Mr. I'Anson had so warmly advocated the French system of education, that he rose to express his own hope that they would never see it adopted in this country. [MR. I'ANSON, without commending the system, he said, it had produced good results in France.] MR. CATES said, Mr. I'Anson's explanation would, in some degree, modify what he had intended to say. It appeared to him that an academic system, such as Mr. I'Anson had explained, leading all the young men to strive for honors in one academy—honors—to gain which they must be trained in one particular line of art, and in one particular school—was one that was detrimental to progress. It might be adapted for France. It was the result of this system that they saw in the buildings, recently published in the work of M. César Daly, and it was to the absence of it, in this country, that they owed the freedom and independence of English architecture, and the progress it had made. In the discussion of this paper they had missed the very important point of the comparison of the systems of education which Mr. I'Anson had spoken of. Mr. Burnell intended to show that official influence was not a beneficial thing to architecture, and that, under such care, the art did not prosper; and the observations of Mr. Pennethorne and Professor Kerr shew that, in this country, they had made great progress without it. He thought the system of medals and prizes, and examination, adopted by this Institute, was one which, if further developed, might be highly beneficial: free from any special style or influence, it incited men to do their best in every style, and the best design was sure to meet with reward. As regards the respective merits of the architects of the two countries, they had dealt with them as if each were working upon the same data. The English architect is blamed because he had not produced, in street architecture, buildings as grand as in France. Let those who cast that blame look at the difference of the conditions under which each worked. In the one case, there was a large area of ground, and valuable ground, requiring to be occupied with large buildings to the best advantage, with exigencies requiring a complicated arrangement of plans, which, however excellent it might be on paper, or under the circumstances, frequently became such as would not be tolerated in an English house. In London the architect was, for the most part, restricted to narrow frontages; he had the limited means of individuals, and the personal wants and caprices of individuals to study. He had no demand or need for the arrangement of complicated plans; no opportunity for broadness of effect, except in few cases. The comparison between the two, therefore, if reduced to the same data, would not be unfavourable to the English architect. If they consulted the elevations given by M. César Daly, beautiful as they were in detail, if they dealt with them as works of architecture, the majority of them would be found wanting in taste, and they would not compare with similar designs of English architects, though, in details of ornamentation, they might be superior. He thought much of the deficiency of feeling in French architecture was to be ascribed to the "mill," through which all their architects passed. It deprived him of that freedom which the young architect ought to claim for himself. It held out a prize if they succeeded in a particular system, but it prevented the exercise of that freedom in general design, which they exercised in ornamentation, but which the English architect achieved in his énsemble.

Mr. C. F. **Hayward** (Hon. Sec.,) said it was gratifying to find that Professor Kerr and others were not in favour of a centralized system of education in this country, and also to hear that Mr. I'Anson did not approve of that education which he described as existing in France. But he deemed it a most fortunate circumstance that they should have had two such papers as those which had been consecutively brought before the Institute: one by Mr. Burnell, giving an entirely practical and scientific view of architectural education; and the other by Mr. Ruskin, setting before them, in such glowing and poetic terms, the higher anspirations of the architect:—the one by a gentleman practically engaged in both engineering and architecture, and a writer full of scientific information: the other by a most distinguished amateur, who had devoted immense personal labour, and most enthusiastic and painstaking study to the elucidation of those truths of art and construction which were the foundation of all good architecture. The one, inspired by a full confidence in the principles of scientific research, tempered by a sense of the difficulties occurring in actual every-day work—the other by a deep and earnest faith in the artistic and poetic elements of our art, untramelled by the deadening influences of dull details, and unbiassed by the prejudices contracted in daily official routine. Thus had they brought vividly before them both sides of the question: the pure scientific view, and that higher artistic one to which they ought to endeavour to attain. And this served to show, he thought, the position in which the architect stood in contradistinction to that of the engineer. The architect had to deal with the scientific to a large extent, but to a much greater extent with the artistic; and it had been stated in this room that the less the engineer had to do with the artistic the better. He differed from that opinion, but would not say anything on that subject at present, except to observe that, in the history of past ages, even when the architect and the engineer were one and the same person, it was rather to the detriment of the art than to the benefit of the science. Agreeing, as he did, in the fullest manner, with those nobler sentiments as regards the poetic element in architecture, he could not also help feeling, alas! too much what Professor Kerr had urged (though perhaps not quite so strongly as he put it), that there was a great deal in daily practice which was dragging them away from the highest aims to the mere engineering and non-poetic principle, in a way which was, perhaps, inexplicable to one not actually engaged in building operations. He would now draw attention to that particular part of Mr. Burnell's paper which referred to architectural education, in a tone which was indeed far from encouraging. The gist of that paper was that the system of education in France, after so much had been said with regard to it, had been entirely unsuccessful in producing a noble and artistic architecture in that country. Thus it came singularly *apropos* to hear Mr. Ruskin recommend so earnestly that individual study, that high moral and religious personal training, as opposed to dry academic work, which, however desirable in other points of view, was non-essential to make them good artists. Schools of art, as accessorial to architecture, were of use only when there was a genuine love of the art itself, and a genuine desire for that study, which in itself was enough without these accessories, but which ought to be doubly prosperous under the opportunities which were now offered on all sides for the acquisition of architectural knowledge.

The PRESIDENT said they had had a very satisfactory discussion, and he would sum it up in few words. As Mr. I'Anson had pointed out, there were two sides to the question: there was the artistic side and the political side; besides which there was the educational side. It struck him that the difference between France and England was summed up in one word, which the Frenchman had always on his lips. It was one which might seem almost blasphemous when applied to a human being. Instead of a Frenchman being "obliged" to you, you are always his "*providence.*" A Frenchman always appealed to a *providence* of some sort; it might be republic, king, or emperor, for the whole system of French education tended to the working up to a centre, with inability for corporate action, combined with great clearness and ingenuity in the individual. Whether French architecture were better or worse than English, he was satisfied, in spite of Vestries, in spite of Boards, and all else that came to vex their souls, that the architects of this country would do well to prefer the "ills they have" to placing themselves under a government *providence.*

The meeting then adjourned.

A DESCRIPTION OF THE MANCHESTER ASSIZE COURTS.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, June 12th, 1865,

By ALFRED WATERHOUSE, Fellow.

THE Manchester Assize Courts, the building I have to describe to you, has no very remarkable points about it to make a long account desirable or necessary; but I will endeavour to explain its arrangement and details, as best and as briefly as I can. For the inevitable prosiness of my paper, I must ask you beforehand to grant, not so much pardon, as pity, in consideration of the hard task imposed on me by our Honorary Secretaries. It is very uninspiring to have to speak of one's own work. Its characteristics one cannot see as they would strike a stranger, and criticism on it is of course impossible.

A Bill having been obtained, giving the county magistrates the necessary powers to erect Assize Courts for the Hundred of Salford, of which district Manchester is the centre, a site was secured by them, which, though not in the heart of the city, had the advantage of being near the Victoria Railway Station, to which most of the frequenters of the Courts, not being in Manchester, would come. If not as open as might have been desired, nor with dignified surroundings, the site, a plot of about an acre and a quarter, has the merit of facing a principal thoroughfare, and of being on the north-east side of it, so that the principal fronts are in sunshine—a point which I regret is not more systematically insisted upon in the choice of sites for our public buildings.

The land was purchased in 1858. Instructions to architects competing were issued in the autumn of that year, and the designs were received in April 1859. My design having been honoured by the selection of the Committee, the enlargement of some of the rooms beyond the sizes mentioned in the printed instructions was determined upon, and while the general design was preparing, the site (a hill-side rising gradually from the street), was reduced to a level plateau. On one side, that towards South Hall Street, it was discovered that a "clough," or deep water-course, since filled in with rubbish, had formerly been. A great depth had in this part to be excavated before a sound foundation was reached.

The greater part of the walls stand upon the gravel; a small portion on red sandstone. No concrete was used as a foundation, except below the inverted vault under the tower, but all the walls were built upon large slabs of Crawshaw-Booth flag, seven or eight inches thick, laid transversely and projecting some inches beyond the brick footings of the walls on either side. The rest of the foundation walls were in brick, and finished with a course of asphalte, at the level of the ground in front of the building, to prevent the rise of damp. This work was nearly completed, when the contract for the superstructure was let to Mr. Samuel Bramall, of Manchester, for the sum of £69,979. on the 16th of June, 1860. The building was opened on the 26th of July, 1864, more than a year after the appointed time, Mr. Bramall's operations having been hindered by several strikes, and by severe weather during the early part of the period allowed him. I may as well state that there was no solemn laying of the foundation stone, and so no coins of the realm need be sought for under the ruins of the building by the antiquarian New Zealander of the future!

To describe the chief divisions of the building, I may say, in the first place, that it consists of two almost distinct parts; the main structure, containing the courts, public offices, and arrangements for business; and the judges' residence or lodgings, separated from the former by a court yard in front, but connected with it by a corridor at the back. The main building is divided into three storeys, each floor being entirely on one level. The basement, the floor of which is 18 inches or 2 feet above the level of the street, extends over the entire area of the building, and is 14 feet high from floor to ceiling. The rooms on the principal storey fronting the street are 19 feet high in the clear; and those over them, which constitute the upper storey (there being nothing above the principal storey at the back of the building), are about 20 feet in the clear. Where there are flat ceilings, the spaces in the roofs are partially occupied by workshops and ventilating trunks. In the basement are the cells for prisoners under immediate order for trial; various chambers for the heating and ventilating of the building; kitchens and refreshment rooms. On the principal floor are the central hall, the Assize courts themselves, a subsidiary court, called "the Sheriff's Court" in the instructions, and the various rooms for the accommodation of the Bench, the Bar, the different officers of the Courts, witnesses, and jurors. On the upper floor are situated the Chancery Court for the County Palatine of Lancaster, the grand jury room, magistrates' board room, and barristers' mess room.

To describe, in the first place, themost important parts of the building—all situated, as might be expected, on the principal floor. The Crown and Civil Courts for conducting the ordinary business of the Assizes are of equal dimensions, viz., 59 feet by 45 feet, exclusive of recessed galleries opposite the bench, are 39 feet 6 inches high, and are, I believe, among the largest courts in the kingdom. Behind the bench, in both courts, are of course the judges' retiring rooms, which are removed from each other only by a narrow vestibule under the tower. The judges thus sit *dos-à-dos*, and a consultation if needful is easily arranged. These courts have oak wainscotting, up to 12 feet 6 inches from the floor, formed of vertical strips, with sunk moulded edges; above, the walls are of Huddersfield stone, the lower part being of plain ashlar 3 feet high, and the upper broken with a deeply recessed arcade. On the north-east side, and the end over the bench in each case, the arches are occupied by the windows, while on the south-west side the arcade is filled in with plaster for wall painting in the future, and the end opposite the bench in each court (the arcade being open) forms an upper gallery for ladies, recessed and slightly projecting. The chief intention of these galleries was, by securing a broken surface to destroy the echo at the ends of the rooms farthest removed from the business part of the court. Their deep shadow also relieves the monotony of the arcades, and they afford a view of the proceedings of the courts. The Civil Court is divided into five bays in length by three in width; the Crown Court into seven in length by five in width. In the latter the windows are of one light, pointed and cusped, with iron casements hung folding below a fixed iron transom. In the Civil Court the windows are of three lights, with traceried heads. The ceilings of both courts are of plaster, divided by wooden beams, and decorated in colour by Mr. Crace. In the case of the Crown Court, the sills are canted somewhat like the ceiling of the House of Commons. In the other, the ceiling is slightly coved.

It is worthy of notice that though both the courts are of precisely the same size, proportion, and fittings, lined with the same materials, disposed in the same way, and filled by the same voices, directed in each case to exactly the same points, the Crown Court is acoustically the better one of the two, there being no echo whatever when the court is moderately well filled. This can hardly be said for the other room, which has required a thick cloth behind the arcade of its gallery to destroy its echo. The difference I can only attribute to two causes, viz., that the Crown Court is more subdivided into bays, and that its ceiling is canted instead of being coved.

In the arrangement of the Courts, the ordinary practice of placing the Bar opposite the Bench has been followed. The jury is on the judge's left hand, the witness box on his right and brought close to the Bench. A passage has been constructed under the Bench to give increased facility of communication, particularly with the witness box, which can thus be approached directly from the central hall through the witnesses rooms, which are under the judge's retiring rooms. The passage has two returns at right angles with the Bench, and over these returns are placed galleries raised about seven feet above the floor of the courts, intended on the one side for jurors in waiting, being immediately behind their box, and on the other side for visitors, and (in the Crown Court,) for the grand jury. Reporters are placed immediately below the jury. The seats for Queen's Counsel are placed on the floor of the Court, and the seats behind, intended for the junior counsel, and those behind them again for witnesses in waiting and the public generally, are arranged on an acoustic curve, so that (except as regards distance) everybody in the Court has an equal chance of seeing and hearing the proceedings.

I ought to state that "the great unwashed" come in by separate entrances, at the end of the Courts opposite the Bench, and stand upon a platform, their heads, when standing, continuing the curve already described. All the fittings are of oak; the barristers' seats are slightly hollowed, and their desks draw out for the convenience of those wishing to write, and can readily be pushed back to admit of others passing. In each Court there is a dock; that in the Nisi Prius being taken to pieces or put together in a very short space of time, to meet the requirements of the Court, which sometimes has suddenly to enter upon criminal business. Each dock communicates directly with the cells below.

The small court called the Sheriff's Court, on the other side of the corridor, is principally used for cases of a minor character tried before counsel. Its arrangements are of an ordinary character.

To each of the large Courts there are 8 entrances, (not to speak of two doors on the upper floor leading to the ladies galleries above); one for the judge from his retiring-room; another for the grand jury; another for common jurors, connecting their box with their retiring-room; another for barristers; another under the Bench, and not shewn on the ground plan, for witnesses; another for the more respectable portion of the public and those having business in Court, and two others opposite the Bench for those not having any business in Court.

All these entrances, excepting those leading to the retiring-rooms, are approached from the corridors, which, diverging from the centre hall, run round the building, and return to the hall again. The centre hall, therefore, forms the medium for communication with the whole building.

The dimensions of this hall are 100 feet long by 48 feet 6 inches wide, by 75 feet high. The roof seems at first sight constructed on the hammer-beam principle, divided into seven bays, but it differs in one important respect from ordinary hammer-beam roofs. The thrust is not outwards on the side walls, but the roof is supported at the extremity of the hammer-beams by two latticed timber-trusses 16 feet 6 inches deep, running along the whole length of the hall, at each side, and resting, with a vertical pressure, upon the gable walls, which are buttressed for their reception. These lattice girders carry king-post principals, supporting the upper portion of the roof, while the massive wall-brackets are needed principally to steady the girders. The spandrils of the wall-brackets are filled in with plate tracery pierced with a geometric design, and on their projecting ends are perched a row of grotesque figures, with their backs against the uprights of the latticed girders, holding the gas pendants in their hands. The spaces between the rafters are in plaster coloured. The moulds on the curved ribs are painted in black and vellum; a little vermillion and blue being introduced in other places.

The floor of the central hall is formed of slate, and chocolate and drab tiles, with encaustic and glazed black tiles introduced in small quantities; the whole forming a varied geometric pattern.

The hall is approached from without by three entrances, the heads of which are pointed and filled in with tracery. The south-west wall, on either side of these entrances, is pierced with an arcade supported by granite shafts, and lighting the staircases which ascend to the floors above. The sills of these openings rake with the stairs, and under these stairs are others, also communicating with the hall, leading to the refreshment-rooms, &c., in the basement. Opposite the principal entrances are three other doorways. That in the centre, leading to the vestibule under the tower, is, in fact, the way by which the judges approach their Courts; the arches on either side, divided in the centre by three shafts, set one behind the other, lead, on the one side, into the lower galleries of the Courts, and on the other into the witness-rooms below the judges retiring-rooms. Still further to the right and left are arches on either side with recessed seats. Above the three central arches are large traceried windows, filled in with what are supposed to be the armorial bearings of the personages whose statues are in course of execution for the outside of the building, over the main entrance. The hall is lighted by two large windows, one at either end. The window looking north-west is 32 feet high by 18 feet wide, and consists of seven lights. This window is filled with glass illustrative of the signing of Magna Charta, and containing the figures of John, Fitz Walter, and Stephen, Archbishop of Canterbury, with their arms and those of many others of the barons. At the foot is the following extract from the Great Charter itself:—"To none will we sell, to none will we deny, to none will we delay, right or justice." Underneath this window is a flat segmental arch 14 feet wide, behind which is a general inquiry-office, used by newspaper vendors, the Electric Telegraph Company, the Post-office, and as a place for the depositing of coats, parcels, &c. The other end of the hall has a six-light window filled in with the arms of England, Scotland, and Ireland, the Duchy of Lancaster, and the different towns within the hundred of Salford. The walls of the central hall are lined with Huddersfield stone, except a space of about 4 feet from the floor, which is lined with tiles, partially glazed, of different patterns and colours, black, drab, and chocolate predominating. These tiles stand upon a stone plinth about 9 inches high, and are capped by a moulded stone string, above which the ashlar commences. The only further ornamentation of the hall is the string which runs round its two sides, at the level of the corbels supporting the roof, on which is inscribed the extract from Magna Charta commencing "Nullus liber homo," and an arcade above this string on the south-west side filling the spaces between the principals, and giving light to the upper corridors behind it. This arcade, which somewhat resembles a triforium, has each arch divided by a granite shaft in the centre, with tracery above, and affords a good view of the hall and those within it to the curious above

The corridors are 10 feet wide. Their floors are all fireproof, and the pavement formed, like that of the central hall, of slates and tiles, the pattern not being so rich. The walls are also, like those of the central hall, lined with tiles up to a certain height, enclosed by stone string and plinth; above they are finished in Martin's cement. The ceilings of those corridors, which have other corridors above them, are generally formed of brick arches, springing from transverse cast-iron beams, supported on stone corbels. These arches are plastered for the sake of reflecting light. The south-east corridor is groined, the moulded wall ribs intersecting with the transverse ribs a little above the springing. Though in these vaulted corridors it was a difficult matter to introduce as much light in all places as could be wished, yet by contriving that there should be either a window or a well-hole with a large roof-light above it, at the end of each length of corridor, there is no gloom about them which is considered objectionable. The well-holes possess the advantage—occurring, as they do, at the corners of the building, where the corridors return at right angles—of lighting both floors, the upper corridors abutting against the well and being protected by a wrought-iron guard, and the passage connecting the two lengths being carried across obliquely behind the angle pier of the well.

The barristers' corridor at the rear of the Courts is 184 feet long, and shut off by glazed doors at either end, so as to keep it, as much as practicable, for the exclusive use of the Bar. Its polygonal roof is glazed in the upper part with large sheets of rough plate glass, slightly stained, and with a geometric pattern hatched upon it in dark brown. Arched and cusped principals divide these lights every 10 feet, and are relieved in colour. On one side of this corridor are the Courts—on the other the apartments devoted to the use of the Bar.

The central hall and corridors are approached from the outside by two entrances. The main entrance, groined in six compartments, is filled in with alternate bands of warm Huddersfield and blue Forest of Dean stone. The ridge ribs rise towards the centre boss. The shafts of the columns, which are sturdy in their proportions, being 2 feet in diameter, are of Dalbeattie granite.

The inner pair of shafts illustrate in their capitals the different modes of punishment resorted to in the "good old times," perpetuating the memory of the wheel, the pillory, the scolds'-bridle, the stocks, and other valuable institutions.

Between the bases of the outer shafts three wrought iron gates cut off access to the outer porch. These gates descend through the steps into the air chamber below when the building is in use. The lavatories and other conveniences for the public are approached from recesses on either side of this entrance porch, which I considered a better arrangement than their opening from the interior. Just before coming to the glass doors leading to the central hall, a long two-light window on either side presents a view of the staircases ascending to the right and left. The porch is 40 feet by 25 feet in its internal dimensions, and gives access by twenty-eight steps, arranged in two flights, to the level of the principal floor.

I have said that the main entrance faces Great Ducie Street, in the centre of the south-west front. On the south-east front of the building, that nearest the city, is a side entrance, with a groined porch, 12 feet 6 inches square, the vaulting being filled in like that of the other, but the vaulting ribs themselves being less richly moulded. Within the porch is a groined vestibule, uniting with the corridor running north-east in giving a more varied effect of column, arch, and vault than is to be found in other parts of the building. To the right of the vestibule rises a staircase, having the spandril wall pierced between the two flights with an arcade. This staircase is lighted by five windows of two lights each, 21 feet high, on the sides of an octagonal and buttressed tower—a prominent object from the street. This lantern is groined like the corridor below it. The steps, like those of all the other staircases in the building, are 6 feet in width, and of Derbyshire stone. There is a fourth staircase at the north-west end, lighted by a large window of five lights, 20 feet high, over the roof of an adjoining consultation room.

Opposite the main entrance, and seen through the gloom of the archway under the tower, is a door in the barristers' corridor, opening into the library, a room 60 by 25 feet. The first half is filled up with bookshelves, which are divided into five bays by massive oak storey posts, supporting the curved ribs which carry the roof. Over the front of the bookshelves rise horizontal lights filled with coloured glass, bearing the arms of the different Inns of Court. The inner recesses are lighted by windows, emblazoned in the one case with the arms of Sir Alexander E. Cockburn, Lord Chief Justice, of Sir Frederick Pollock, Chief Baron, and of Sir William Erle, Chief Justice of Common Pleas; and in the other with those of Lord Westbury, and of the five ex-Chancellors living in 1863, the year in which this part of the building was finished. The recesses are filled with easy seats and tables for writing and study.

Next to the library is the robing room, containing a separate wardrobe for each barrister on the circuit. Beyond, and approached only through the robing room, is a circular building, with a ventilating shaft in the centre. The lavatories and other water appliances range round the shaft. It is economical of space, and, from its situation free from all objection. The rooms of the prothonotary and the clerk of the Crown, and the indictment office also open into the barristers' corridor.

The other rooms on the ground floor are devoted to witnesses, who are classified as far as possible, (there being separate rooms for those required for the prosecution and those for the defence, and private rooms for ladies), to jurors, attorneys' and barristers' clerks, to the various functionaries, from the High Sheriff downwards, and to purposes of consultation.

The grand jury room is situated immediately over the principal entrance. It is a room 40 feet by 25 feet, with five two-light windows, three to the front and one on each side in the break formed by the projection which is given to the central porch. Opposite the windows is a massive hooded chimney piece. The floor is of parqueterie. The ceiling has its main timbers visible; boards pieced with quatrefoils or other simple geometric patterns by machinery, with moulds above and below them form the cornice around each bay. The ceiling is further relieved by light plaster moulds in geometric patterns in each bay. This is the sort of treatment adopted generally in the principal apartments with flat ceilings. The pierced wooden cornices are of course available for the ventilation of the rooms, and serve better for that purpose than plaister, which soon gets discoloured, from the dust drawn up by the current of air. The grand jury room is furnished with a semi-elliptical table, on the outer curve of which the grand jurors sit, having the witness before them at a point midway between the two foci of the ellipse, with his face to the light. The room is entered from two ante-rooms,—the one, for grand jurors only, is at the head of the stairs which lead by the way of the central hall to their gallery in the Crown Court, the other ante-room is the entrance for witnesses. In the neighbourhood of each ante-room are retiring rooms and waiting rooms.

At the western angle of the building is the Chancery Court, 41 feet by 23 feet, lighted from the side by windows, with retiring room for judge leading from the bench. At the opposite end of the main part is the barristers' dining room, 55 feet by 22 feet, with a luncheon room opening out of it, connected with it by balanced doors; and behind this is a serving room, with lift and hot closet.

The kitchens are in the basement, where the Bar has its own cellar.

The county magistrates' board room, with ante-room and. waiting room attached, is placed in the eastern angle of the building, so that its windows may overlook the exercising grounds of the County Gaol now in course of erection on the slope behind the Courts.

The basement floor contains in the rear nineteen cells for the reception of prisoners, as well as other cells directly under the Courts for prisoners about to undergo their trial. These cells communicate directly with the docks of the Courts above them.

The corridors downstairs are lined with red and Staffordshire blue bricks disposed in diapers. In addition to the kitchens already described, there is the porter's dwelling, and refreshment rooms, both first and second class, approached by separate staircases leading from the central hall. And, besides the large spaces occupied by the warming and ventilating arrangements, there are numerous other cellars for storage and coal.

The ventilation of the building was entrusted to Messrs. Haden and Son of Trowbridge, their plan having been selected out of many schemes for carrying out this important work. Messrs. Haden's system is, I believe, well known to the members of this Institute, but I may be allowed to mention the way in which it has been applied in this case. The heating is effected by a combination of the warm water and warm air systems, but principally by hot water. The air is introduced into the building through large square openings, filled in with stone tracery, on the sides of each of the main entrances, and in cold weather is warmed previous to being admitted into the rooms and corridors; but that which is intended for the hall and principal Courts undergoes a further process in the large cellar under the chief porch facing Ducie Street, into which it first enters. In this cellar the air is both cooled and freed from all dust by being made to pass through a thick mist, very much resembling the spray of a waterfall, which is caused by the ejection of water at high pressure against a series of perfectly true metal discs. The air so cooled and purified passes through a vaulted space over the basement corridor into two chambers under the central hall, in which fan-blowers are placed. These chambers are connected with spaces immediately below the Civil and Criminal Courts, which are so arranged as to admit of the free circulation of the air to all parts of the under surface of the floors. The fresh air is admitted into the Courts themselves through gratings in the risers of the steps or other convenient places, and is either warm or cold by a simple adjustment of certain valves. When it is desired that the air should be warm, a portion of the current of cold air is directed by means of these valves through a chamber containing a system of hot-water pipes, and thence the heated air is conducted to the space below the floors, where it mingles with the colder air, and passes into the Courts at a satisfactory temperature. Each Court has its own system of pipes. The fan-blowers are of course only used to accelerate the passage of the air when it does not enter the Courts with sufficient force to keep them fresh. The ventilation of the Sheriff's Court is effected in much the same way. The vitiated air is carried off from the various rooms by extraction flues, chiefly in the walls and ceilings, these flues being afterwards collected together and carried into the tower, where it was intended, if necessary to have further means of accelerating the passage of the vitiated air. These have not, however, been found needful to the extent anticipated.* The corridors and hall are warmed principally by hot-water pipes under the floor with gratings over them. Under the staircases are coils of pipes enclosed within open metal-work screens. Into every room in the building, I believe, the air is introduced through a double grating placed in the wall near the ceiling. The openings for introducing fresh air are very much greater than those for carrying off the vitiated air, so as to prevent the current from going the wrong way. The hot water is supplied by two large boilers, and a third boiler has been put down to drive the engine, which is of eight-horse power and propels the blowers. The fans and steam engine are placed in the basement immediately below the central hall. In addition to this system of ventilation most of the rooms have open fire-places, tiles being introduced as much as possible into both grates and hearths. I must do Messrs. Haden the justice to say that their system of warming and ventilation has answered thoroughly well. The windows of the Courts have been made to open, not because in my opinion there was any real necessity for it, but in case the judge liked the look of an open window in very warm weather. This was done in opposition to Messrs. Haden's wishes, who considered the temperature could be kept lower with the windows closed. On a very hot day during the first Assizes that were held in the building, one of the judges complained of the heat of his Court, and requested that the windows might be opened. After the windows had been opened a quarter of an hour, the thermometer stood 5° higher than it had previously done, from the outer air being so much warmer than that which had been syringed below. The sight of the open windows, however, satisfied his Lordship.

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* Though a coil of steam pipes has been erected near the two opposite points where the horizontal trunks enter the tower to give the air currents an upward tendency, instead of allowing them to neutralize each other.

The house occupied by the judges, called in true circuit fashion the "lodgings," is three stories high in the front, and four at the back. I have kept it purposely lower than the main building, and endeavoured to give it a more domestic character. The lodgings are approached from the street level by a small groined porch leading into an enclosed court yard. A little vestibule on one side of the porch opens into a hall 20 feet square. This has a large open fireplace, and is separated by a stone screen, one of James O'Shea's best bits of work, from the staircase, which is made of pitch-pine, and has a balustrade of geometric design, with carved heraldic figures surmounting the newels. The staircase shows its construction throughout. On the basement floor are the kitchen, larders, and other offices. The dining room, drawing room and ante rooms, are on the first floor, as are also a small smoking room, the rooms of the steward and house-keeper, and judge's clerk's room. The drawing room is 40 feet by 20, and has an oriel window looking out upon Ducie Street. The dining room is 35 feet by 20, and has a serving room at its rear, with lift from the kitchen below. All the windows of entertaining rooms, looking north-west into the side street, are filled with stained glass to obscure a very indifferent prospect. Up above are the bed rooms of the judges and their suite, in which considerable additional height of ceiling is given by dispensing with the ordinary principals, and using latticed girders running from gable to gable, to the under side of which the cross braces are secured.

The judges, as I have before remarked, pass easily from their entertaining rooms to the retiring rooms behind their courts by a corridor which looks into the court yard, which court yard is shut off from the public approach by a screen wall and gateway. This screen, through which the judges enter their court yard, I have dedicated, as it were, to King Solomon. The finial of this gable represents a vine and fig-tree entwined—emblems of the peace ensured by justice wisely administered; and the capitals in the arcading illustrate in their foliage plants written of by the king, who was learned in all trees, from the cedar to the hyssop on the wall. Over the arch of entrance, a circular block of stone is reserved for Mr. Woolner to adorn with a bas-relief of the Judgment of Solomon. At the foot of the gable on either side are sitting figures of the two women who claimed possession of the living child—the one tenderly caressing it, the other neglecting hers in drunken heedlessness. Under the oriel of the judge's drawing room are words from the Psalm for Solomon, "He shall judge thy people with righteousness, and thy poor with judgment."

For the outermost corner of the "lodgings," Mr. Woolner is preparing a statue of Mercy, while over the people's entrance, on the other side, a sitting figure of Justice is to be placed, not the conventional blindfolded woman with scales; but a stern king sitting on his throne. Whether the multitude will be warned by the one, or the judges softened by the other, is perhaps a moral rather than æsthetic question.

I have purposely postponed saying much about the exterior of the Courts, because I think the perspective drawing which is before you may give a better idea of the building than any description in words. The mouldings and details are thirteenth century in their general character; but wherever I thought that the particular object in view could not be best attained by a strict adherence to precedent, I took the liberty of departing from it. The total length of the Ducie Street front is 360 feet, of which the main building occupies about 256; and the depth along South Hall Street is 166 feet. Of the three storeys, the lowest has flat, square headed windows, deeply recessed with detached shafts in the centre. The principal floor has pointed windows, with geometric tracery in the upper part. These windows open as casements in metal frames; and the stone-work internally runs up square, the spandrils being filled in either with arms or foliated ornament; and a wooden architrave encloses the stone-work with a square head near the ceiling of the room. Between the windows are sunk panels, bearing the arms of the different towns within the hundred of Salford, which send their prisoners for trial to this building. Above the string course, already alluded to, are the windows of the upper floor. These are more deeply sunk than those of either of the other storeys. The window frame is 1 foot 9 inches behind the face of the wall; and the windows themselves, instead of having splayed jambs, are the exact width of the openings in front of the wall, and the otherwise plain reveal is broken up by a deep recess about 6 inches in front of the window frame, the part of the jamb in front of the recess forming the respond, which with the coupled Dalbeattie granite shafts standing before the centre mullion carry the cusped front arches. Some of the salient angles of these recessed reveals are simply left as bold rolls, others are cut into varieties of dog tooth and other continuous enrichments. I believe I am indebted to Mr. Scott for a hint or two as to the treatment of these windows, of which I may therefore perhaps be allowed to say that I consider them the most effective portions of the exterior. Above the relieving arches over them comes an enriched cornice surmounted by an open parapet. Between every bay I have put a gargoyle, not simply for ornament, but in order to carry off the water from the gutters whenever by mischance a down spout is stopped up, and so to give timely warning to the plumber. These gargoyles are supported at the salient angles of the building by figures typifying in all their ugliness the vices, such as drunkenness, gambling, and theft, which lead to the necessity for criminal law. The pinnacles over the gargoyles take the form of heraldic figures supporting the arms of the towns in the Hundred. I may mention here that the bosses terminating the labels of the principal floor windows are heads of the different sovereigns of these realms chronologically arranged, from Alfred the Great to Victoria. The coupled windows of the grand jury room over the principal entrance are rather richer than those on either side, and have their columns set one behind the other instead of abreast. Between these windows are niches for eight statues, only one of which is at present in its place, viz., that of Edward I. The other seven will represent Alfred the Great, Glanville, Henry II., Gascoyne, Sir Thomas More, Coke, and Sir Matthew Hale. These are now being executed from models supplied by Mr. Woolner. The figure of Moses surmounting the central gable is also from Mr. Woolner's studio; the model is now at the Dublin Exhibition. The same sculptor has executed for the interior of the building alto relievo heads of Bacon and Lord Brougham, the latter as having been once a leader on the northern circuit.

The main façade of the building stands back more than 100 feet from the centre of Great Ducie Street, to which it is parallel, and measures about 60 feet from base to parapet. Through the open tracery of the parapet and above it the steeply pitched roofs appear, rising in the centre, and at the angles to points of considerable altitude, and covered with Welsh slates of two colours. Above this the ventilating tower is seen to tolerable advantage. It is 20 feet square, and rises to a height including the vane of 210 feet. At frequent intervals it is bonded with large slabs of hard stone running right through the walls, into which chain-bond has been inserted at three different heights. The lower part is a plain panelled shaft, terminating in a corbel table and double string. Above are deeply recessed two-light windows, flanked by over-sailing angle turrets, and surmounted by a gabled and slated spire. This tower serves as an upshaft for the vitiated air, and as a station from whence to view the city, at an elevation of about 150 feet, up to which point a substantial stone staircase going all round the tower ascends. It was originally intended if needed to carry up a central metal shaft for the purpose of conducting the vitiated air out of the building and ejecting it through the circular openings, of which there are four in each gable. Actual experiment however proved that there was no need for this. The tower is therefore left entirely open. The tower foundations were set in blue lias. By two spurs at each angle their base was spread as much as possible. The upper part, as in fact all the walls above ground of the entire building, was set in Warmsworth or Weldon Wood lime, which makes a most tenacious mortar.

A spacious yard is provided at the back for the setting down and taking up prisoners within the walls, with a van-house and a two-stall stable attached. A turret staircase on the north side leads to the external gutters, any part of which can be easily reached from this point, as the gutters behind the parapet are carried across the main gable for that purpose. In the front of the building is a low parapet wall about 3 feet 6 inches high, broken with piers at intervals, on which lamps are about to be placed. The exterior, faced with Darley Dale stone from Mr. Whitworth's quarries, is relieved in places with Stypherson or Forest of Dean stone of a greenish or bluish grey. This is introduced in the alternate voussoirs of the arches, and in the bands of groining as before stated. Dalbeattie granite (polished) has been used for all external detached shafts, and for certain bands in the upper part of tower, and at first was used for the inlay in the broad string running round the building at the level of the upper floor. I found, however, that the grey granite was most ineffective in such small quantities, contrasting with the ground of Darley Dale stone, so the granite was replaced with maroon coloured tiles, and was itself used afterwards in combination with maroon tiles as a border to the flag pavements of the upper corridors, where I think the effect is satisfactory.

The foliage carving, of which there is a considerable quantity, was most of it executed by Messrs. O'Shea and Whelan, or under their immediate direction. Great credit is, I think, due to them for some of their work, which, taken, by itself, is generally very spirited and original. The fact, however, that much of their carving, in common with other peoples, looked much better when half worked, induces me to believe that if our allies, the stone-carvers, would put more thought and less work into their foliage, architecture would be greatly the better for it, and their own art would be more highly appreciated accordingly. Whether our foilage be natural or conventional seems, in my humble judgment, to be of less importance than that each leaf should appear to grow from the bell, or mould so as perfectly to accord with its surroundings. Its curves should be made an object of anxious study, so as to maintain the general form intended by the architect. Its foliage should be vigorous and severe, and especially should a wiry character and a deep undercutting be avoided. It is right that we should employ sculpture and polychromy on our buildings, but our utmost exertions are needed to prevent these handmaids, invaluable when kept in their right place, from endeavouring to outshine instead of serving, their mistress.

It only remains for me to say a word or two about those who carried out the works. For the foundations Mr. Robert Niell was the contractor, and for the superstructure Mr. Samuel Bramall, whose recent death I sincerely deplore.

I feel that no small credit is due to Mr. Bramall, not only for the way in which the work generally was done, but also for the obliging manner in which he allowed me to reconsider the details of the building as it progressed. Though all the detail drawings were made before the work commenced, I believe there was hardly one that was carried out in the way it was originally intended. During the progress of the work, it became evident that many things which I thought had been carefully considered beforehand, would bear modification with improvement, and especially was this the case with mouldings and matters of detail.

The furniture was mostly made from my own sketches, by Mr. Lamb, and Messrs. Doveston, Bird, and Hull, of Manchester, and Messrs. Kendall and Co. of Leeds. For other minor matters—such as dinner services, letter-boxes, &c.—designs were furnished, with a view to make the whole as much in keeping as possible.

The cost of the whole building, including all fixtures, fittings and decorations, boundary walls and approaches, but exclusive of architects' commission, was about £110,000., or nearly 9d. per cube foot. The furniture came to about £10,000. more.

I have before alluded to Mr. Woolner, as the artist engaged upon the figure sculpture. I much regret that, with the exception of the sketch for one of the women over the Judge's gateway, I have nothing to show of this gentleman's work. All the other sketches are in Manchester, except a very grand figure of Glanville, and another (not quite finished) of Sir Thomas More, which are still in the clay, and therefore immoveable. Mr. Imhoff carved, I think very creditably, the heraldry. Messrs. Skidmore and Co. did the metal-work, including the gas fittings. The stained glass was furnished by Messrs. Heaton, Butler and Bayne; and Messrs. Lavers and Barraud, of London; and Messrs. Edmundson and Sons, of Manchester. The decorations were executed by Mr. Crace, whose work is in thoroughly good keeping, everywhere bringing out rather than concealing form, which is, I think, the highest praise that can be given to colour in architecture. I have already spoken of Messrs. Haden's successful system of heating and ventilation. Mr. H. Littler was the very efficient Clerk of Works. To all these gentlemen I feel I owe my sincere thanks for their ready and efficient assistance.

Professor DONALDSON, Past President, said, the author of the paper had been so kind as to enter fully into a description of this building, and they were much indebted to him for the practical lesson he had given with regard to the very admirable arrangements and complete accommodation, which these law courts afforded. He had the pleasure of seeing this building at the beginning of the present year, and he was then so much struck with the plans, the conveniences, and the dignified appearance of the structure, that he felt it his duty in his then capacity of President of the Institute, to endeavour to prevail upon Mr. Waterhouse to favour the Institute with a view of the drawings, accompanied by a description from him of the building itself. He had now to congratulate the members present upon the accomplishment of both those objects; and at the present moment, when there was in contemplation a large project of the like nature in the metropolis, it was very desirable that they should be able to avail themselves of the valuable experience, which Mr. Waterhouse had so generously brought before them. The combinations of courts of law required great study. There were different classes of persons to be accommodated; not merely the washed and unwashed, but the judges, barristers, jurors, officers, and witnesses. Here the arrangement for the convenience of the members of the Bar was of the first character, and he had the pleasure of hearing a friend, a gentleman of the Bar, state, that he had never been in any courts where the comfort of the Bar had been so well studied, and so completely provided for; and the amplitude of the arrangements, even to the minutest parts, showed a noble and liberal spirit on the part of the county by whom this building had been erected. He hoped the Govern- would not fall short of the example set by Manchester, but that they would carry out the courts of law they were likely to have in Lincoln's Inn in the same spirit; that the accommodation would not be niggardly; that the ventilation would be properly attended to, and a large space afforded instead of the minimum required for these important purposes. He might take this opportunity of mentioning that in the case of Manchester the unusual circumstance occurred of the necessity of a Chancery Court being provided for the Duchy of Lancaster. Taking into consideration all the circumstances, it was evident that they had learned a valuable lesson from the generous contribution of their talented Fellow, Mr. Waterhouse, to whom he begged now to propose they should present their best thanks for the paper with which he had favoured them.

Mr. C. FOWLER, JUNR., Fellow, rose, with great pleasure, to second the vote of thanks to Mr. Waterhouse for his interesting paper. That gentleman had described so carefully all the parts of the building, that he would only ask him to favour them with a little more information as to the construction of the roof of the great hall, in describing which he used a term which seemed rather startling. He spoke of a certain system of bracing which was shown in the model as forming longitudinal girders resting on the end gable walls. He, Mr. Fowler, should be obliged to Mr. Waterhouse if he would tell them whether he contemplated the use of that construction, which he spoke of as girders, in order to support the principal weight, and that the curved ribs of the principals served as corbels only, or whether the main construction was that of the hammer-beam roof. He was somewhat puzzled to know why that elaborate construction should have been adopted if the other was the real construction; and if the hammer-beam trusses were the real construction, he could scarcely understand why Mr. Waterhouse had used the expression longitudinal girders with reference to the diagonal bracing between the trussed principals.

Professor DONALDSON remarked that the observations of Mr. Fowler respecting these latticed girders opened a curious question as to the mode of supporting roofs by that sort of girder. He had met with instances in Northamptonshire in which it would have been impossible to support the roof if it had not been for the lattice rib from one gable end to the other, and from which the roof was hung. It was on account of not getting sufficient strength in the side walls to carry the roof. But Mr. Waterhouse avoided this by putting in two lattices—one on each side. It was a principle of recent introduction, and was a subject well worthy investigation as to the extent to which it might be relied upon as a sound system of construction. In the present case the lattices supplied the place of purlins.

Mr. WATERHOUSE, in answer to a question put by Mr. Seddon, observed that the trusses while on the ground could not be tested effectually from their immense size. It occurred to him that as the hammer-beam had so often given by thrusting out the walls, or buckling sideways, it would be well to have additional security by throwing some portion of the weight vertically upon the end walls, and at the same time giving lateral rigidity to the hammer-beams; therefore these latticed girders were constructed. Mr. Fowler had rightly said they were latticed girders running from end to end; in fact, they were nothing more or less than purlins of immense depth, only that on them rest, instead of rafters, king-post principals which support the upper part of the roof. The ends of the hammer-beams are secured to their lower edge. The wall braces, on the other hand, give them rigidity, and if they were to sag a little in the centre would take the weight, and throw it upon the side walls. The drawings were made originally for a hammer-beam roof of the ordinary construction, and it was only after most of the masonry had been built that this modification was adopted.

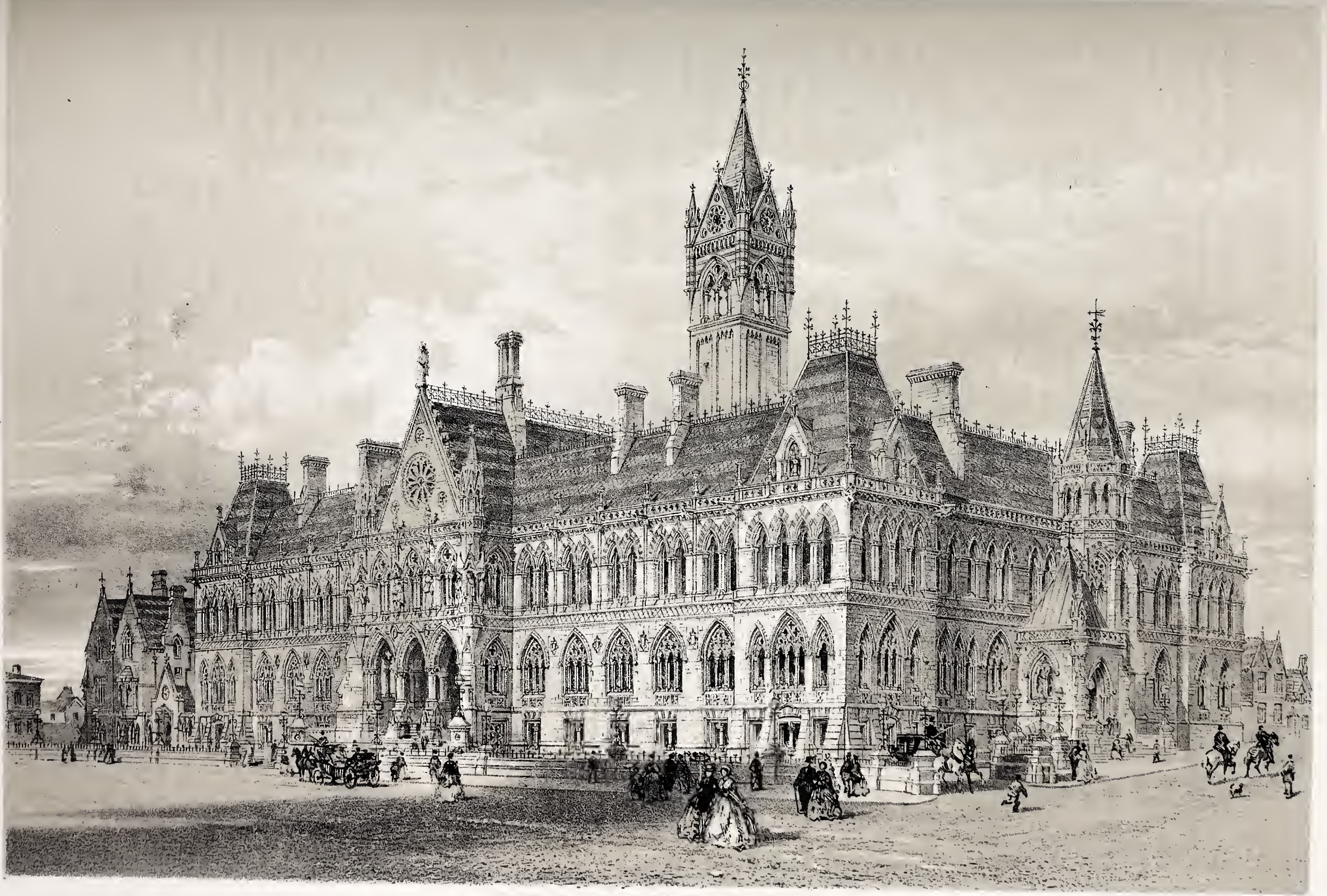
Mr. DIGBY WYATT, Fellow, remarked that in this construction the thrust must depend upon the continuity of the tie. How did Mr. Waterhouse preserve that through the truss?

Mr. WATERHOUSE replied,—by scarfing the upper and lower beams, forming the heads and sills of the trusses.

Professor KERR, Fellow, had been under the impression that there might not be that continuity in the timbers which would constitute the framing really a lattice girder; but that question was now set at rest. However, on the other hand, this must seriously affect the integrity of principle of the hammer-beam truss. Mr. Waterhouse's primary idea no doubt would be simply to place hammer-beam trusses at intervals; thus it had occurred to him to tie these together by means merely of *cross bracing*, with head and sill; then he had improved upon this idea by constituting these cross-bracings in themselves trellis girders. It seemed to be an original idea, and he was happy to find it was successful. He had himself many times preferred trussed purlins to principal trusses. The general practice in designing a *roof* was first to design a *trussed principal;* and the architect thought he had then done all that could be done; but generally speaking it would be found that these trussed principals might be largely dispensed with; he did not mean in such works as churches and halls, but more particularly in ordinary houses. By the trussed principal they threw an enormous weight upon one particular point of the side walls; whereas, with trussed purlins they divided the same weight between several points of the cross walls, and left on the side walls only a share of the weight of the common rafters throughout. One question occurred to him: if really and truly these trellis girders carried the weight of the roof (which must be very great), where were the supports for the trussed girders? [Mr. Waterhouse, referring to his drawings, explained that such supports were specially provided in the form of certain abutment walls.] Professor Kerr considered the explanation quite satisfactory, and the contrivance a very ingenious one. Another question might be raised, whether the hammer-beam trusses were any longer necessary at all, it might be except for ornamental effect? However, he would prefer to compliment Mr. Waterhouse upon his ingenuity in another way. He had at least a double support for his roof, without obvious waste. If he relied upon his transverse principals primarily, these he steadied and assisted by his longitudinal lattice work; if he depended rather upon his trellis girders, these he steadied and assisted by his transverse trusses; in either case, his construction was a legitimate combination of cross trussing, for which he deserved great credit.

The PRESIDENT said the conversation on this interesting paper had terminated unexpectedly, but to their great edification, with a discussion on a very important point of construction. In the meantime they had the pleasurable duty before them of recording their thanks to Mr. Waterhouse for a most able and interesting description of his really grand building. He had the pleasure of seeing it before it was finished; merely the shell had been completed. He went there, knowing of course it was a large structure, knowing also that it had been very carefully built; but yet devoid of that half knowledge which makes the visitor to be beforehand pleased or not pleased. He went to it with at least a dispassionate mind, and he could assure them he came away much pleased—surprised as well as delighted at the grandeur and dignity, as well as the lightsomeness of the building. He was particularly struck with that arrangement which he ventured to term, in the absence of any special English name for the great hall of a pile of judicial buildings the *Salle des pas perdus*, which formed a novel and peculiar feature of the building. The staircases, without covering too much space, were yet grand; and he was likewise particularly struck with the barrister's corridors, in which the treatment of skylights, broken as they were by the recesses of cross arches, had solved with a skilful and artistic success the problem of roof-lighting in Gothic. In a word, although this was not the most sumptuous part of the building, yet for originality of design and general arrangements, this corridor was not the least part of the building. As to the courts, their conveniences spoke for themselves. He agreed with Professor Donaldson that if the Palace of Justice, which we are about to erect, was not only as good as this, but larger and grander in proportion as London is larger and grander than Manchester, it would be a disgrace to the metropolis, a disgrace to England, a disgrace to the architects of the country, and still more to the Government which had fostered such a structure. He anticipated their unanimous vote of thanks to Mr. Waterhouse.

Mr. WATERHOUSE having briefly acknowledged the high compliment paid to him, the meeting adjourned.

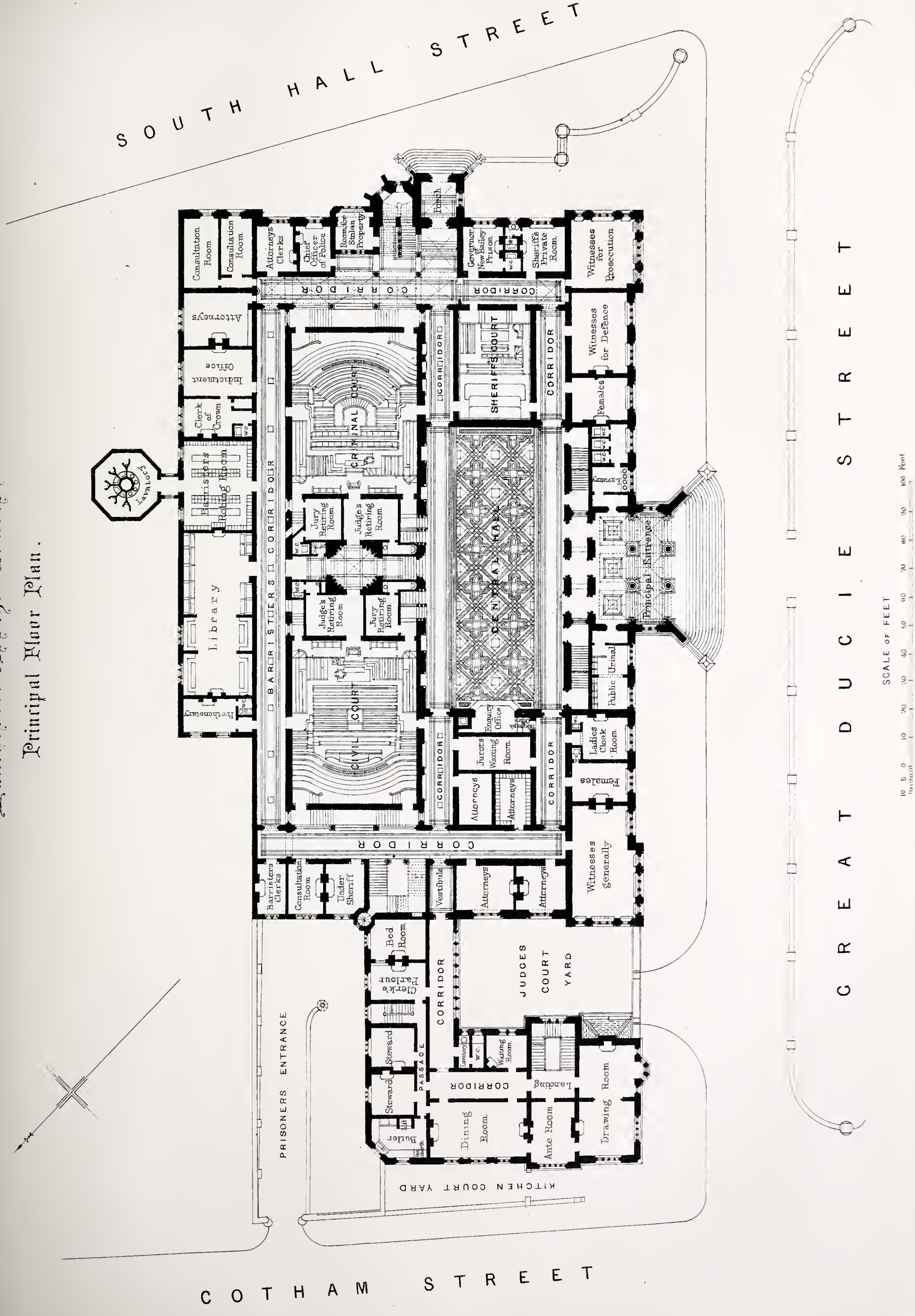


Manchester Assize Courts. View from the South.

H. Waterhouse, Archt

Manchester Assize Courts.

Principal Floor Plan.



ALFRED WATERHOUSE, Architect

Lithog'd for the R.I.B.A. by Kell Bros Castle St Holborn

SOME ACCOUNT OF THE ALTERATIONS AND NEW BUILDINGS AT THE GUILDHALL, CITY OF LONDON.

By HORACE JONES, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, June 26th, 1865.

EVERY one may well feel strongly interested either in one or another in many facts and histories relative to the Guildhall of London. Dedicated as it has been to three distinct and separate purposes, it has at times been the theatre of important acts. First, in the meeting of citizens, whether for the election of the Mayors, Sheriffs, or Burgesses in Parliament, or as a general place of assembly for petitions, discussions, &c. Secondly, in the very important character of a Court for the dispensing of justice. Thirdly, as a banqueting hall, where have been entertained many crowned heads and the most distinguished men of their time, not only of this country, but of all nations. Necessarily I must ask your indulgence to enable me to allude to the intimate connections between this edifice in its present state and the edifices that formerly stood upon its site, and the city, of which in a great measure it may be considered the heart or centre.

LONDON, or LLYN-DIN, is reported to have been the capital of the Trinobantes B.C. 54. Ostorius Scapula founded a Roman colony here after having driven out the Trinobantes A.D. 49. It is first mentioned under the name of Londonium by Tacitus, in his graphic description of the revolt of the Britons in the reign of the Emperor Nero. It was at this time famed for trade, A.D. 61. The first fortification or wall built around the city was in 306. From this time London appears to have rapidly increased both in wealth and public buildings. Westminster Abbey, begun by Sebert in 604, and in 664 the Cathedral of St. Paul's was erected. After suffering from fire, which destroyed part of the city in 801, it was captured by the Danes, 839. They fortified the river wall, and garrisoned it with a large army; but in 884 King Alfred came to the relief of the citizens, and retook the city, and two years afterwards he rebuilt almost the entire city. King Edmund, knowing the importance of getting the assent of the citizens, held a Witena-ge mote (or Meeting of Parliament) for establishing a code of ecclesiastical laws in the city in 945. The Cathedral of St. Paul's totally consumed by fire in 961. A communication with the town of Southwark became so important to the citizens that a wooden bridge was erected over the Thames (London Bridge) in 993. William the Conqueror granted the first charter to the city in 1067, confirming the laws of Edward I, and permitting each child to be his father's heir after his father's day. Ludgate and St. Paul's Cathedral consumed by fire 1086. In 1087 the church of St. Mary-le-bow was erected. This church bore four lanterns upon the tower, in order to guide the persons over the ferry at Queenhithe. London still increasing, and the building being considered very insecure and particularly adapted for continuing a fire—the principal materials being wood—Fitz Elwyne, the first Lord Mayor, in 1189 promulgated his celebrated assize of buildings, directing stone to be used instead of wood, and also good party walls to prevent the spread of fire, and that the houses should be covered with slates and tiles instead of a thatch, and each house to have a proper rain gutter. Soon afterwards, in 1209, London Bridge was began to be built with stone, and in 1211 the city walls were almost rebuilt. Many religious houses sprang up soon after this time, and erected fine spacious buildings.

The name Gild or Guild, or Geld, primarily meaning a payment or tax levied by the fraternity or company combined together for mutual protection. The Guilds were at first for political purposes, afterwards for trade. The House Merchants of Easterlings settled in London in the year 964. The principal factory was in Downgard (or Dowgate), and their ancient house was called Gilhalda Teutoni corum. The English Guilds are spoken of in the reign of Henry II, and they seemed to have gained the enmity of the king for not first getting a Charter of Incorporation, as we find in *Maitland* that they were opprobriously called *Adulterine Gilds*, and fined by the king for their illegal and presumptuous proceedings. The *Gilda Aurifabrorum*, goldsmiths; the *Gilda Peregrinorum*, travellers, &c. Up to the year 1226 the Companies had no power in the Corporation. The Mayor and Aldermen had, however, a certain control over them, and in course of time certain privileges were given to them in the choosing and election of Mayor and Sheriffs.

The Guildhall, or Hall for the meeting of the Guilds, is of very early date. The first entry I have been able to find is in the year 1212, 14th of John. It is in a roll of the Husting Court which was held here. The building must have been a very large one, from the number of people stated to have been present. 1244, the 28th of Henry III, a meeting of the Livery was held for the election of Sheriffs, when objection was taken to the election of the notorious Nicholas Bat. At Hocktide, the second Tuesday after Easter, a case of Dower was tried in the Husting of the Guildhall, 1246. 1256, Henry de Ba, the Justiciar, came to the Guildhall of London, bringing a Writ to the Mayor and Sheriffs from His Majesty the King, directing them to hold an Assize of Wine. At a meeting held here in 1257, a great number of the citizens being present, Michael Zovery and Adam De Basing were sent by the king to restore confidence to the citizens, and to assure them that he would preserve all their rights and privileges unimpaired. An Assize of Bread was held in the Hall before the Justiciar and the Earl of Gloucester in 1258. In 1281-2 a meeting of great importance was held in this Hall in the presence of the Lord Treasurer of England, the Lord Chancellor, Sir Roger Northwood, the Barons of the Exchequer, the Justices of the Jews, the Constable of the Tower, and the whole Court of Aldermen. This was undoubtedly the original Guildhall, or little cottage, spoken of by Fabyan, Grafton, Stow, and other historians. " The old Berry Court or Hal continued, and the Courts of the Maier and Aldermen were continually holden there." They had an entrance from Aldermanbury. This we will call the first Guildhall.

The second Guildhall, according to an entry in the Corporation records, was built in 1326, 20th Edward II, in the mayoralty of Richard de Breton: " Timber and lead granted for the building of the " Guildhall and Chapel;" and in 1379, 3rd of Richard II, John Hadlee, Mayor, directions were given to use the surplus timber and stone from the new Hall in the building of the Chapel. A part of the crypt of this building still exists, although much defaced by fire; some of the columns and the capital are visible. This extends to half the present Hall, and adjoins the present crypt, being divided by a stout brick wall. We might reasonably infer from this evidence that the second building was a part or occupied a part of the present site. In Aggas's Map of London in 1560, there is a representation of the old entry from Aldermanbury. The present front, although being erected, was covered from sight by the building, and there was no entry for carriages, or even an opening into Gresham Street, as now.

We now come to the present or third Guildhall. " The Guildhall," says Robert Fabian, " was begunne to bee builded new in the year 1411, the twelfth of Henry the fourth, by Thomas " Knoles then Maior, and by his brethren the Aldermen, and the same was made of a little cottage a " large and great house, as now it standeth; towardes the charges whereof the companies gave large " benevolences, also offences of men were pardoned for summes of money towardes this worke, and " there was extraordinarie fees raised, fines, amer cementes, and other thinges imployed during seaven " years, and a continuation thereof for three years more, all to bee imployed to this building."

There are several entries in the Records of the Corporation for the building of the same. In 1411, 12th Henry IV, "Ordinances for the susteyning of the New Works at Guildhall." In 1422 fees for the Deeds and Testaments were increased in order to raise a fund for building the New Hall, and in the same year William Myddleton gave sixty pounds towards the new works.

In 1424, 4th Henry VI, the Issues touching Apprentices, Fines, Charters, enrolment of Wills and Letters under the Mayor's Seal, was to be applied for one year to the New Works; and in 1427 the same was extended for two years longer.

"The first yeare of Henry the Sixt, 1422, John Coventrie and John Carpentar, Executors "to Richarde Whitington gave towards the paving of this Great Hall twentie pound, and the next "yeare fifteene pound more to the saide pavement, with harde stone of Purbecke, they also glased some "windows thereof, and of the Maior's Court, on every which window the armes of Richard Whitington "are placed. The foundation of the Maior's Court was laide in the third year of the raigne of Henry "the Sixt, 1424, and of the porch on the south side of the Maior's Court in the fourth of the saide "king. Then was builded the Maior's Chamber and the Counsell Chamber, with other roomes above "the staires; last of all a stately porch entering the Great Hall was erected, the front thereof towards "the south being beautified with images of stone. Divers Aldermen glased the Great Hall and other "courts, as appeareth by their armes on each window. William Hariot Draper, Mayor, 1481, gave "40 pounds to the making of two lovers in the said Guildhall, and towards the glasing thereof."

"The kitchens and other houses of office adjoyning to this Guildhall were builded of later time, "to wit, about the yeare 1501, by procurement of Edmond Shaw, Goldsmith, Mayor, since which time "the Mayor's Feasts have beene yearely kept there, which before time were kept in the Taylor's Hall "and the Grocer's Hall."

"Nicholas Alwin, Grocer, Mayor 1499, deceased 1505, gave by his testament for a hanging of "tapestrie to serve for principal daies in the Guildhall, seventy-three pounds 6s. 8d."

The building suffered much from the Great Fire of 1666, when the open oak roof was entirely destroyed, and the whole of the principal front seriously injured, and amongst other things "that night "(Tuesday, Sept. 4th, 1666) the sight of Guildhall was a fearfull spectacle, which stood the whole body "of it together in view for several hours together, after the fire had taken it, without flames (I suppose "because the timber was of such solid oake) in a bright shining coale, as if it had been a pallace of "gold, or a great building of burnished brass." The Hall was repaired in 1669, and the top row of windows added, and the late flat roof erected, it is said, from the designs of Sir Christopher Wren, but of this fact there is scarcely any evidence, and I doubt whether the reparations, so barbarous in taste, were the work of that great architect. The present mongrel front, or as it is sometimes called Saracenic Gothic, was erected by George Dance, the city architect, in 1789. It is a bad specimen of that gentleman's style.

The Guildhall has been used for various ceremonies and entertainments. Amongst them, in 1357, John, King of France, and Edward the Black Prince received and entertained in the most sumptuous manner by the Mayor and citizens, May 24. Again, in 1419, King Henry V entertained by the Corporation at Guildhall, when it is reported, after the entertainment the Lord Mayor *entertained* the King by burning the bonds for money lent to that Monarch to the value of £60,000. The Duke of Buckingham attended with the Lord Mayor and Sheriffs, by command of Richard III, and addressed a great multitude of Liverymen assembled in the Common Hall, and pointed out to them the bastardy of King Edward V, and endeavoured to show them that a youth of such tender years was not fitted to protect the commerce and trade of the City of London like one so skilled in diplomacy as Richard Plantagenet. The Duke was most successful, and shortly afterwards the citizens waited upon the Duke of Gloucester and requested him to accept the crown, Tuesday, 24th June, 1483. This scene is depicted in Shakespeare's Richard III, Act III, Scene 5.

Glo. Go affer, after, Cousin Buckingham,
The Mayor towards Guild Hall hies him in all post;
There, at the modest vantage of the time,
Infer the bastardy of Edward's children.
Tell them how Edward put to death a citizen,
Only for saying he would make his son
" Heir to the Crown." Meaning, indeed, his House,
Which, by the sign thereof, was termed so.

And again—

Buck. I go; and towards three or four o'clock
Look for the news that the Guild Hall affords,

In Pepys's Diary, under date 11th Feb. 1659-60, he records the reception of Gen. Monk at the Guildhall. In later times, King Charles II, after being entertained by the City, was presented with the freedom in great state in the large hall, Oct. 29, 1675, not to mention here more modern entertainments.

The Court of Hustings, held in the Guildhall, is of very ancient origin. The Saxon Folkmote, or as it is now called, the Hustings Court; the word Hustings in Saxon signifies the *House of Causes*, a general Council or Court. The Court was considered the highest Court of Judicature. The presiding Judges are the Lord Mayor and Sheriffs. The proceedings were in some measure similar to the County Courts, with the addition, anciently, of the enrolment of deeds and wills, &c. The following entries are from the English Chronicle, and show the uses the Hall was put to in the holding of this Court. In 1441 Maister Roger and Master Thomas were tried in the Guildhalle of Londoun for tresons and sorcery. On the 18th of November, in the same year, Maister Roger Bollyngbrooke was arreymed for tresonn agens the Kyngis persone, and thereof, by XII men of Londoun, he was founde guilty. Lord Say (Saye) was brought out of the Tour unto Guyldehalle to be tried, Saturday, July 4, 1450.

The following entries are from the Diary of Henry Machyn, Citizen and Merchant Taylor of London:—In 1550-1, the xiiij day of Marche was rayned at the Yeld-halle a C (hundred) mareners for robyng on the see, and the Captayne, belying a Skott, was cared to Nugate the same day, and certen cast (condemned). In 1552, the vij day of June, the Duke of Northumberland and dyvers of the Kynges Consell sat at Yeld-hall to hear certen causys, and toke up my Lord Mayre and his brodurne for vetell, because he lokyd not to it, and for sellyng of the same, and oder causys. In 1559, the furst day of December, was raynyd at the Yeld-hall, Master Grymston, Captayn.

The Porch.—The Hall is approached by a porch consisting of two divisions, formed by an arch and columns crossing in the centre; the wall on either side is subdivided into smaller compartments, with tracery and quatrefoil turns. The groined roof, with stone ribs springing from the sides, are intersected in the centre with sculptured bosses with various devices of the arms and bearings of Edward the Confessor.

The Crypt.—The Crypt of this building is, without doubt, the most ancient and finest superstructure of this kind now existing in London. It is also remarkable for the perfect condition of all its members, columns, arches, and groins, this applies solely to the eastern crypt. It is separated into three ailes of equal width, by two rows of piers and arches. The piers are a cluster of four small pillars, have plain capitals from which the arches and groins spread over the roof. At each intersection of the groins is a boss, some are very large, bearing shields with the arms of Edward the Confessor, the City arms and the rest, well sculptured roses. This crypt was lowered to its original depth in 1851, and thoroughly repaired. The Queen was entertained here in 1851. The western crypt is evidently the earliest, and there is little doubt but that it was the foundation of the first Guildhall; it is entered by a pointed door from the western end, and is separated from the other by a substantial wall of masonry. There are still visible in the side wall shafts and a springer; one aisle runs through the centre.

THE GUILDHALL CHAPEL.—This ancient appendage to the Guildhall was founded by Peter Fanlove, Adam Francis, and Henry Frowick, citizens, and dedicated to St. Mary Magdalen and all Saints, and called London College, in 1299. In the records of the Corporation of the date of 1326, there is an account of timber and lead granted for the building of, and in 1379 the surplus materials not used in the building of the Guildhall was given for the same purpose.

1413.—In Holinshed's Chronicle, vol. III, p. 56, there is the following entry:—" He (Richard " Whittington) also builded for the ease of the Maior of London, his brethren, and the worshipful " citizens, on the solemne days of their assemblie, a Chapell adjoining to the Guildhall, to the intent that " before they entered into any of their worldlie affaires, they should begin with prayer and invocation " to God for his assistance."

In the mayoralty of John Welles, grocer, it was rebuilt, 1431.

From Machyn's Diary.—" The vj day of May (1554) was a goodly evyng song at Yeldhall Colege, by the Masters of the Clarkes and ther felowshyppe of Clarkes, with syngyng and playing, as youe have hard. [The morrow after was a great Mass at the same place, by the same fraternity, when every Clerk offered a halfpenny. The Mass was sung by divers of the Queen's Chapel and children]. The xxvij day of May (1555) was the Clarkes prossessyon from Yeldhall College, and a goodly Masse he hard (or has been heard), and evere Clarke havying a crosse and garland, with C. (hundred) shewers borne, and the whettes (waits) playing round Chepe, and so to Ledynhall (unto St. *Albro* Chyrche) (Ethelburga), and there they putt off their gayre (gear), and there was the blessyd Sacrament borne with torche light abowt, and from thens unto Barbur-hall to dener. The tomb of Sir Thomas Kneesworth, late Mare of London, repaired by John Bullok, xvij of June, 1562."

This Chapel suffered greatly by the fire of London in 1666; but was not so much injured (nor has been subsequently altered by repairs) as to lose its architectural features, retaining, both externally and internally, the chief of them. It consisted of a main and side aisle, the latter of which is to the north, but does not appear to have had any regular communication with the former, and is quite plain. The west had a large window with tracery entire, and beneath it a handsome pointed arch entrance, under a square architrave, having sculptured capitals with quatrefoils and shields with arms in the spandrills: against the windows were three niches, large and heavy. They contained good figures of King Edward VI; Queen Elizabeth, with a Phœnix under her; and of Charles I, treading upon a globe, sculptured by Stone; the spaces of wall on each side, and under the window, were ornamented with panels. At the dissolution of the religious houses it was purchased by the Mayor and Commonalty, and used as the Court of Requests. It was taken down in 1822 to make way for the present Courts of Law. The window is preserved in the Chamberlain's office. The remains of the crypt still remain, with the stairs leading to the Chapel.

Copies of the views of this building, by J. C. Buckler, I have great pleasure in presenting to the Institute.

LIBRARY.—Holinshed's Chronicle: " In 1413 Richard Whittington builded for the Citie a Librarie of stone for the custodie of their records and other books." John Carpenter, Common Clerk or Town, Clerk, left by his will, dated 1441, 8th March, some good and rare books to this Library. " I will and " bequeath that these books be placed by my executors and chained in that Library, under such form that " the visitors and students thereof may be the sooner admonished to pray for my soul." These books were taken away by the Duke of Somerset. " These books (as it is said) were in the raigne of Edward " the VI sent for by Edward Duke of Sommerset, Lord Protector, with promise to be restored shortly; " men loaded from thence three carriers with them, but never returned."

In the Hall and Library used to hang the portraits of the various Judges, and amongst others the portrait of Sir Matthew Hale and his ten cotemporaries, who were employed in adjusting the disputes between landlords and tenants in the rebuilding of the City after the great fire of 1666.

The accompanying illustrations show the roof and its general construction better than any lengthy description possibly can, but the following dimensions may be useful. The fair average width of the Hall is 49 ft. 6. The clustered shafts project about 2 ft. on each side, and their height to springing of arch ribs is 34 ft. The height from the present pavement to the underside of ridge is 89 ft. The total length is 152 ft., and there are eight bays and seven principals. The length of the collar between the queen-posts is 29 ft., and was cut out of timber about 2 ft. 8 square. One peculiarity of the construction of the roof is that there is a double lining, one of 2 in. oak, and another of 1½ in. deal On this latter the slates are laid.

In conclusion, for this evening, I have to express my belief that there are still many interesting circumstances, and much that would easily afford a field for archæological criticism, antiquarian, and architectural study, not only in this Guildhall but in the surrounding buildings, as well as in many of the other parts of this City. It would afford me a great pleasure to lay before you, when more leisure would perhaps enable me to do justice to the subject, some further facts and illustrations, could I obtain your permission to offer them. I will now place at the disposal of the Librarian the tracings of the sketches of Guildhall Chapel that I have referred to in the course of this short and incomplete essay.

The CHAIRMAN, Professor T. HAYTER LEWIS, V. P., said they must all be extremely gratified to find that the City Architect had the courage to put aside that feeling of official reserve which sometimes characterised public officers, and to tell his fellow members at the Institute all he knew about the very interesting work on which he had been engaged. He saw before him several gentlemen who were well qualified to offer suggestions upon this subject and amongst them his friend Mr. J. H. Parker, who he hoped would favour the meeting with some observations upon it.

Mr. JOHN HENRY PARKER, Hon. Member, expressed his deep regret that through being obliged, owing to the state of his health, to reside on the continent during the winter, he had been prevented from attending any of the previous meetings of the Institute. With respect to the Guildhall, he would express his pleasure at the restoration of the magnificent hall of that edifice in a manner so consistent with the original design of the building, and it appeared to have been well carried out. It had always been an interesting building, and as he had frequently regretted the state in which it was allowed to remain, he was glad to see that the authorities of the city had at length the good taste, first to appreciate a fine Mediæval structure, and in the next place to restore it properly. He wished the same taste prevailed in other countries. We had gone ahead in that respect, and other countries were gradually following, he hoped, in our steps. He alluded more particularly to Rome, where he was sorry to say the spirit of architecture in the present day was as bad, in his idea, as could be.

Mr. JENNINGS, Fellow, rose to propose a vote of thanks to the author of the paper of the evening. It was very desirable that architects, who have works in hand, should give as much information as they could respecting them; and they had to thank Mr. Jones for his information on the present occasion, though not strictly of an architectural character. He must differ from some portions of the paper, for he could not agree with the statement that trade was not the commencement of the guilds. He believed they were originated for the purposes of trade, which was borne out by the fact that one of the present guilds of the City was older than the charter of the City itself, and persons belonging to that guild were entitled to trade in the City though they were not free of the City. He alluded to the Weavers' Company, which was instituted previous to the granting of the Royal Charter to the City. He conceived the commercial classes of the City were composed of the various guilds, and that the Guildhall was the place of common use and resort by those guilds; but he was not aware till now that the Guildhall, as well as St. Paul's, was built up partly upon the sins of the people. He was aware that a portion of old St. Paul's was built with funds supplied from the delinquencies of the inhabitants of the diocese, but not that this system was applied also to the construction of Guildhall. There was considerable interest connected with the old Chapel, and if he recollected right it existed when Blackwell Hall was pulled down. The window and front formed a very interesting elevation. He recollected that building when it was used as a Court of Requests, but not directly connected with the Corporation; for when a lad he went there with his father, who was Judge of the Court of Requests, though he was never a member of the Corporation. There was a very curious entrance to Blackwell Hall, and he should have been glad if it had been noticed in connection with this subject. It was a very handsome doorway, and on one occasion, the royal state carriage passing through it, the crown on the top was broken off, which at that time was regarded by the superstitious as an ill omen to the then Prince of Wales; however, he kept his crown to the day of his death. According to the plan for the restoration of the Guildhall, he observed that it was intended to remove the buildings in order to obtain such a façade as was designed facing King Street. If so, a much larger frontage would be obtained, and portions of other buildings must come down. It was a question of removing sufficient of the side buildings to get such a view as was projected. He should be pleased to see the Guildhall the handsome building it ought to be, and a proper view of it obtained.

Mr. HORACE JONES said, the buildings were a considerable distance from the present Hall, and some of the buttresses were built into the adjoining work as closets. The buildings referred to only touched the eastern end of the Hall, and formed no portion of the Hall itself.

Mr. CHARLES BAILY, Visitor, said, that he had an opportunity of watching the progress of the works from the commencement. During the pulling down of the upper story, which was modern, and said to have been built by Sir Christopher Wren after the great fire of 1666, he had discovered a large number of moulded stones, which he considered had formed portions of the stone principals of the ancient roof; he informed Mr. Roberts of this discovery, but that gentleman called at the Guildhall when he (Mr. Baily) was engaged elsewhere, and did not see the mouldings referred to, but some vaulting mouldings of small size, which had no doubt belonged to the groinings of the now destroyed crypt under the western half of the Hall. He (Mr. Baily) thought he could prove that the old roof consisted of a series of stone principals or arches from column to column, seven in number, dividing the length of the Hall into eight bays. [In reply to Professor Donaldson, Mr. Baily stated that these moulded stones were found in the modern walls said to be erected by Sir Christopher Wren.] Between the columns on the sides of the Hall there did exist an ancient stone cornice, and on the capitals of the columns the spaces were filled up with modern brickwork, except in one instance, in which some of the stone mouldings were found occupying their original position, the sections of the mouldings were of enormous size: placing the stones together they measured at least four feet across. It would be admitted that such ribs as these could not belong to a vaulted ceiling; but they exactly corresponded in section with the great arches over the large windows at the eastern and western ends of the Hall, and which arches, supposing it were a stone roof, would form the half or wall principals at the ends of the Hall. The mouldings were worked on both sides of the stones, showing they were complete ribs, side for side. Where then, he would ask, could such stone mouldings have been used? The two windows were complete to the present day. When he first discovered these large stone ribs, he thought there were enough of the stones to build three or four of the stone principals. He thought that any practical architect, looking at the section of the Guildhall, would agree with him that it was a roof formed of stone arched principals from side columns to side columns, and so far resembling the roof of Mayfield, in Sussex. Then there were the immense buttresses of the walls, which it must be admitted were intended to support a roof with a great lateral thrust, such as the roof he had described would have had. If they took the extreme width from the outside of the buttresses, and divided the whole space into five, they might take two spaces for the buttresses and walls, and the remaining three for the void occasioned by the interior of the Hall. He had forgotten to state that the buttresses had originally been carried up above the lines of the wall plate, as if there had originally been pinnacles, the weight of which would assist in counteracting the thrust of the stone roof. There never could have been a hammer-beam roof, nor a groined ceiling, for the line and position of the original rafter had been discovered, and this was so close down upon the arch of the end windows as to leave no room for either. One of the most important restorations which had been made was the opening of the side windows of the Hall: these have a very fine effect. He must object to the opinion that a large amount of lateral thrust existed in the new hammer-beam roof which had been placed on the Guildhall; he maintained there was no more lateral thrust than there would have been with a roof with a tie beam. The portion above the collar beam was a very strong king-post truss, which suspended the great arch in the lower piece of framing by its being firmly attached to it by means of bolts to the collar. Looking at one half of the lower piece of framing, what was it but a perfect queen-post truss, in which the great arched trace became a tie beam? The hammer-beam and the upright wall puncheon became queen posts, and the lower end of the principal rafter of the great roof became the collar. How was it possible, then, for such a roof to spread and thrust out the walls? Referring to the roof of Westminster Hall, there was no real necessity for the flying buttress. In Mr. Sidney Smirke's account of that Hall, in the "Archæologia," it was stated that there are in some cases spaces between the corbels and the lower parts of the great rib sufficiently wide to pass the hand between, and if that were so there could not be the immense pressure upon the walls which had been stated.

Mr. E. ROBERTS, F.S.A., Fellow, rose to express his opinion that the Guildhall roof was not similar to that at Mayfield. He had the honour of being called in by the Guildhall Improvement Committee, and had reported, with Mr. Digby Wyatt, on the design of Mr. Bunning. In pulling down some portions of the upper parts of the walls built after the fire, some arch stones were discovered which were said to be evidence of a roof like that at Mayfield. He made a point of examining them in the presence of Mr. Myers and the foreman of the works, and he found the materials of the upper story of the building were of all periods, and of many kinds of stone, and he concluded that they were the *debris* of many other buildings destroyed by the fire. He found the arch stones, which were supposed to have spanned the Guildhall, were rebated out at the upper sides, and there were four-way keystones. If these stones were used in the building it must have been for a vaulted roof, which, though it agreed with the wish of the last speaker, was certainly not the case. As far as he knew (and every known record had been searched), there was no evidence that the roof of the Guildhall was ever other than a timber one. All the writings about the period of the great fire went to show the roof to have been of wood, and he regarded the restoration of the roof in that material as a proper and consistent one.

Mr. HOVENDEN HENDRY, Associate, asked whether the roof of the Guildhall had stood without spreading, and submitted that all the evidences were in favour of the original roof having been a stone groined roof, and not a wooden one.

Mr. BURGES, Fellow, said that during the progress of the works at the Guildhall Mr. Jones had not only shown him the drawings but had given him the opportunity of carefully inspecting the works under the guidance of one of his clerks. He was then told that the original roof was thought to be of the Mayfield construction. This at first he was very much inclined to doubt, but a careful inspection of some remaining fragments of the great stone arches, as well as the consideration of the enormous projection of the buttresses, eventually induced him to come round to that opinion. It would be observed that the projection of the buttresses, the thickness of the walls, and the projection of the inside pillars would make up an abutment on either side of little less than one quarter the span. In justice to Mr. Jones, however, it should be remarked that all the timber was already sawn out for a very hideous design, which had been contracted for in the first instance, before his plans were made. It was entirely owing to Mr. Jones that they had the present roof, his appointment to the office of City Architect having been very opportunely made in relation to this work.

Mr. THOMAS MORRIS, Associate, remarked that the roof of Westminster Hall presented an instance of a wooden arch of two centres, and it was as near the form of the Mayfield arch as possible. He believed it was made with the intention of being loaded on the same principle as a stone rib. They had deviated from that system of construction almost ever since Westminster Hall was built, and had failed in modern works to recognise the original object of these wooden arches. There was little doubt that William of Wykham was the originator of the roof of Westminster Hall, and that it was intended to imitate and supersede the use of such stone gables as were found at Mayfield and other places.

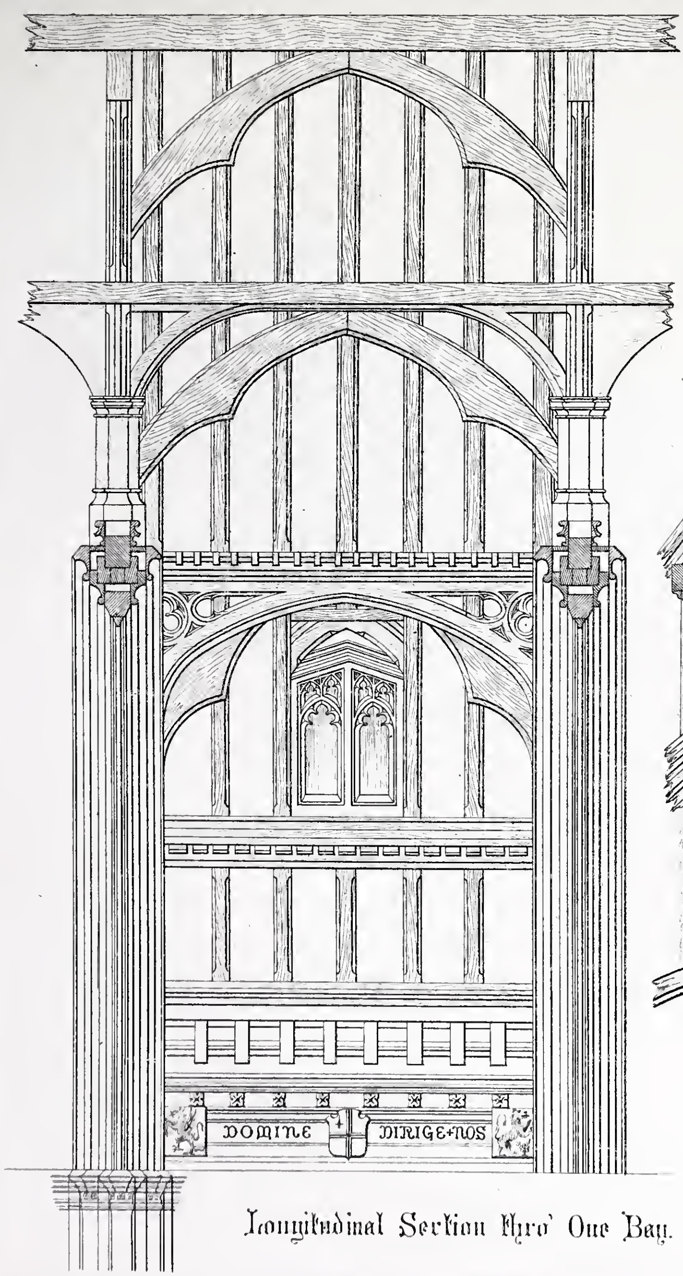
Mr. J. H. PARKER remarked that it was a matter of indifference whether the principals were made of stone or wood, and they had examples both ways. An instance occurred at the Mote, Ightham, Kent, where they were alternately of wood and stone, and by the mere view in a drawing one could not tell which was which. If good timber was at hand they made them of timber; if stone was the readiest material they used stone. The same buttress was required to carry the one as the other. The new roof of the Guildhall was a very good one, consistent with the architecture of the period and the style of the building, and he did not think the question of stone or wood principals affected the character of it in any way. Stone principals, or arches in place of principals, are common in some parts of France, especially across the ailes of churches, as in the Isle de France and in the church of Montmartre in Paris. There are also many examples of this arrangement over halls in England, as in Conway Castle, and several others whose names he did not remember at the moment.

Mr. OCTAVIUS HANSARD, Fellow, mentioned that, in a History of London by Allen and Wright, there was a note stating that a Col. Smith, formerly Deputy-Governor of the Tower, had a painting, representing London after the great fire, in which about one-third of the roof of Guildhall appeared standing, showing a gable roof; and that in Hollar's View of London, *circa* 1647, the roof appears with two lanterns arising from it. If this painting could be traced, doubtless something might be discovered therein of interest, and perhaps decide the question of wood or stone.

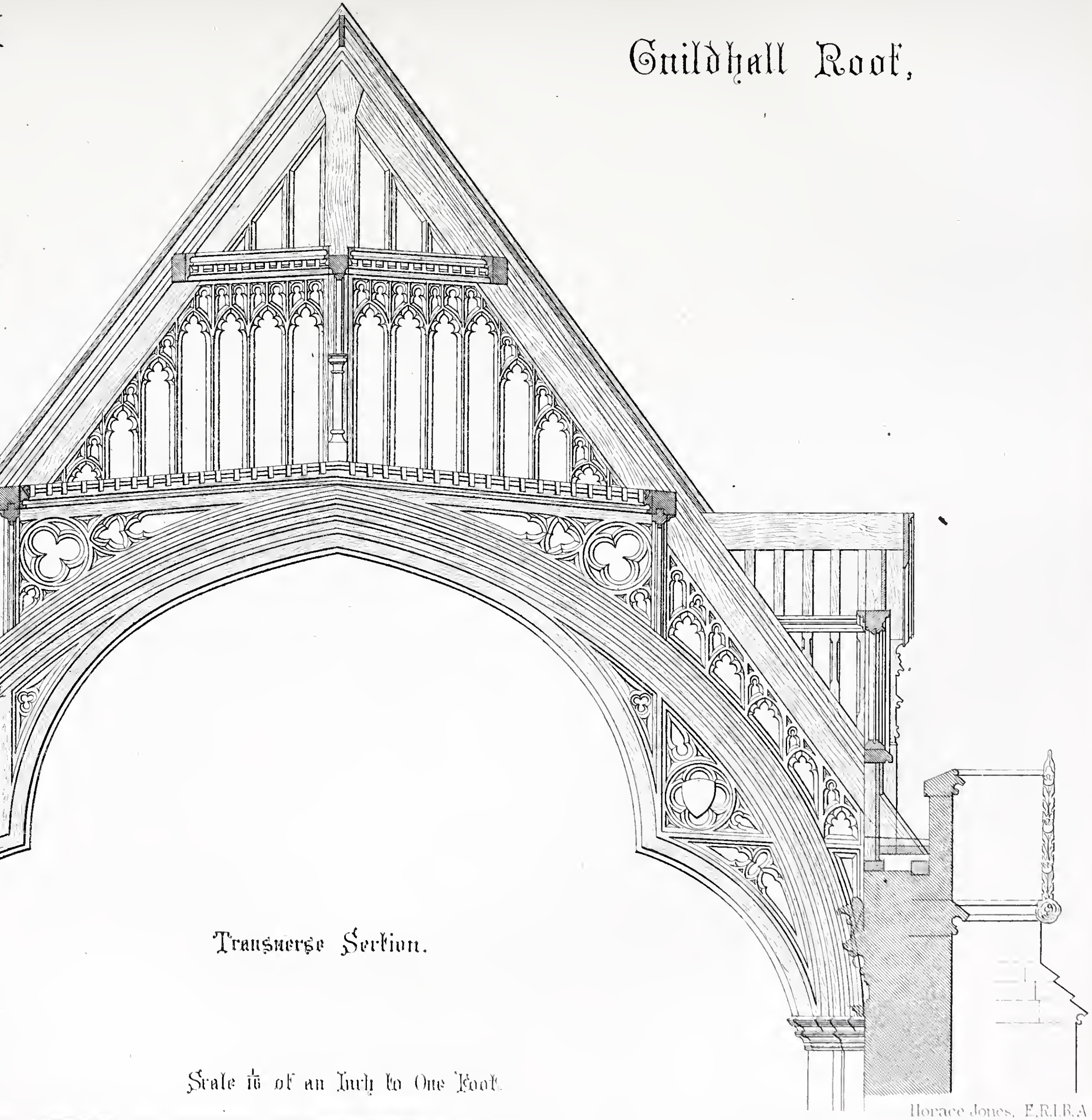
Mr. J. W. PAPWORTH, Fellow, said that some of the remarks just made afforded him an opportunity of saying a few words upon a subject which he felt strongly, viz., the principles and rules for restoration which were issued by the Institute about twelve months since. He protested against their being considered as having gone forth with the sanction and authority of the Institute. He would be glad to know how they came to be issued at all. He considered it was the act of a committee stealing a march on the body; and it was a question with him whether he should not move that those instructions should be withdrawn, or that they should be advertised as not to be taken as representing the views of the Institute generally. With respect to the subject now before them, he wished to ask, looking at the lithographs and the drawings, where the centres for the great arch of the roof were situated, as the lithograph especially seemed to show a deficiency of curve.

The CHAIRMAN closed the proceedings of the Session by tendering the thanks of the meeting to the author of the paper.

Guildhall Roof,



Longitudinal Section thro' One Bay.

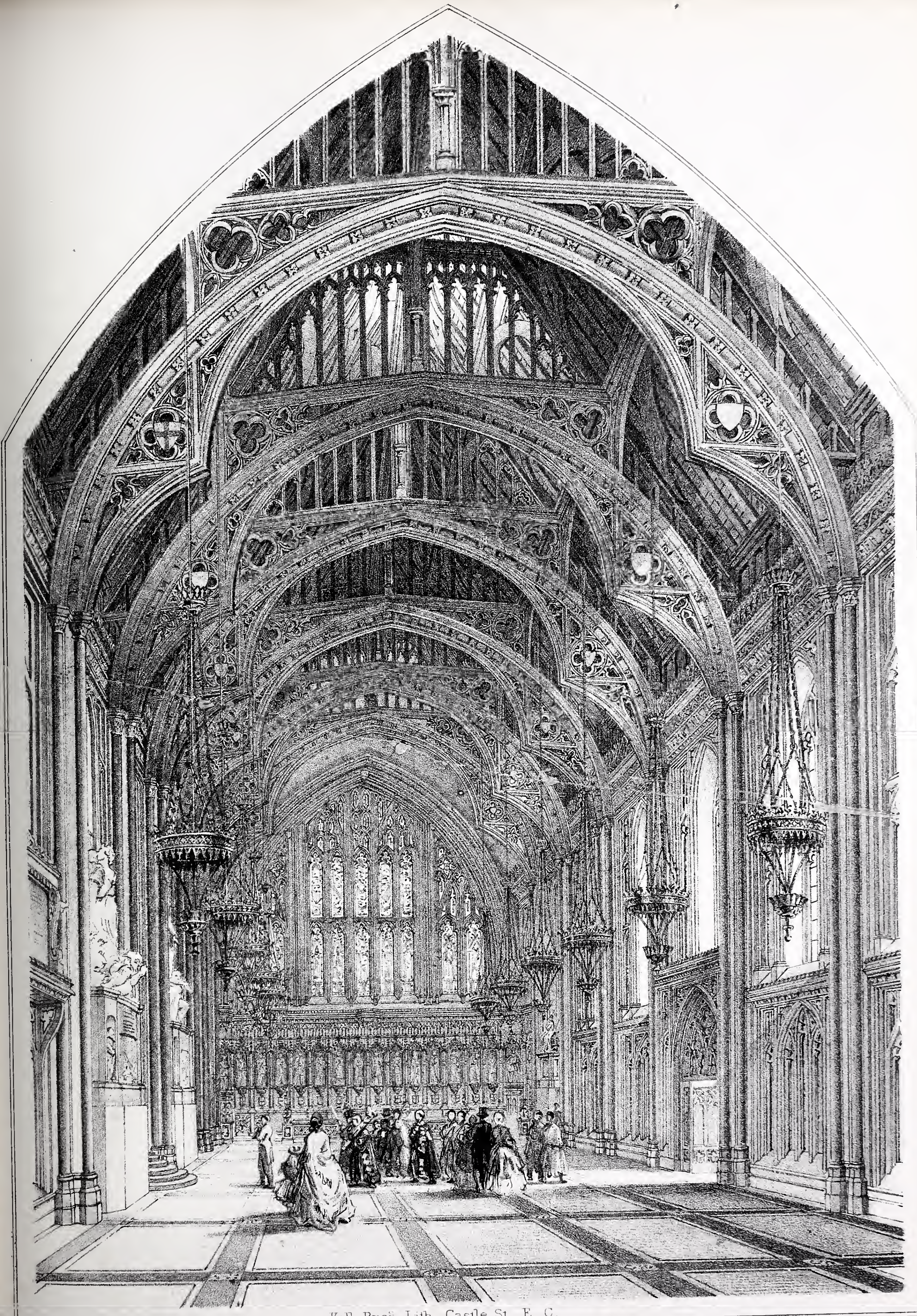


Transverse Section.

Scale $\frac{1}{16}$ of an Inch to One Foot.

Horace Jones, F.R.I.B.A.

Lithog^d for the R.I.B.A. by Kell Bros, London, E.C.

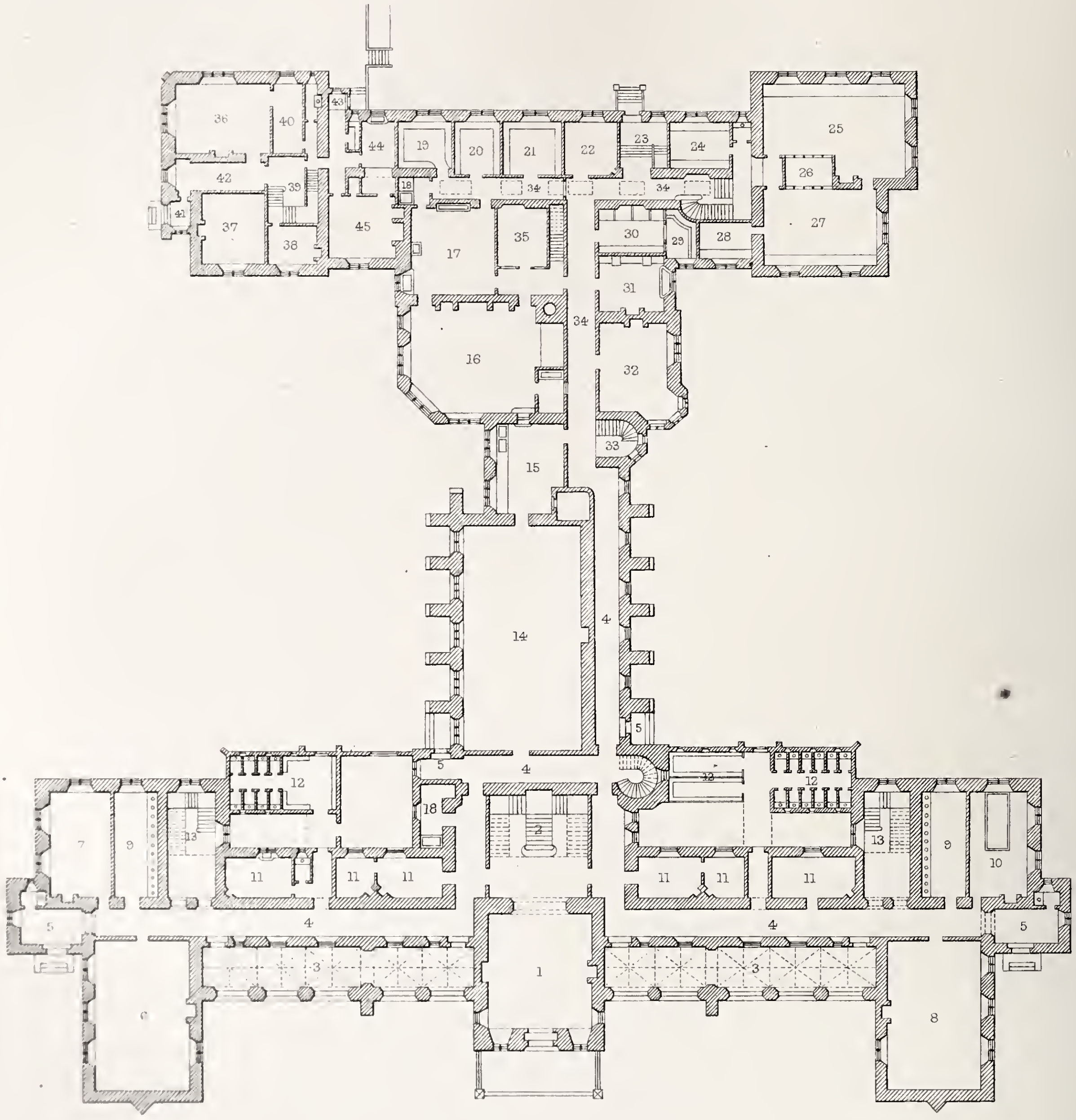


Kell Bro^s Lith Castle St, E. C.

Guildhall Interior

Fettes College, Edinburgh.

Plan of Ground Floor.



REFERENCES TO PLAN.

1	Entrance Hall	
2	Principal Staircase	
3	Piazza	
4	Corridors	
5	Side Entrances	
6	Gymnasium	
7	Work Room	
8	Play Room	
9	Lavatories	
10	Plunge Bath	
11	Warden's Apartments	
12	Urinaries and W.C's, &c	
13	Staircase to Class Rooms	
14	Dining Hall	
15	Dinner Service Room and Safe	
*16	Kitchen	
*17	Scullery	
18	Coal hoist	
*19	Dairy	
*20	Pantry	
*21	Larder	
*22	House Stewards Office	
*23.	Entrance Lobby	
*24	Folding Room	
25	Laundry	
26	Drying Closet	
27	Washing House	
*28	Dirty Clothes	
*29	Grocery Store.	
*30	Bread Store	
*31.	Butler's Pantry.	
*32.	Servants Hall.	
33.	Private Stair.	
34.	Passages.	
35.	Crockery.	
36.	Dining Room.	House Governor's Residence
37.	Study or Parlour.	
38.	Room.	
39.	Staircase.	
40.	Pantry.	
41.	Porch.	
42.	Lobby.	
43.	Back Entrance.	
44.	Scullery.	
45.	Kitchen.	

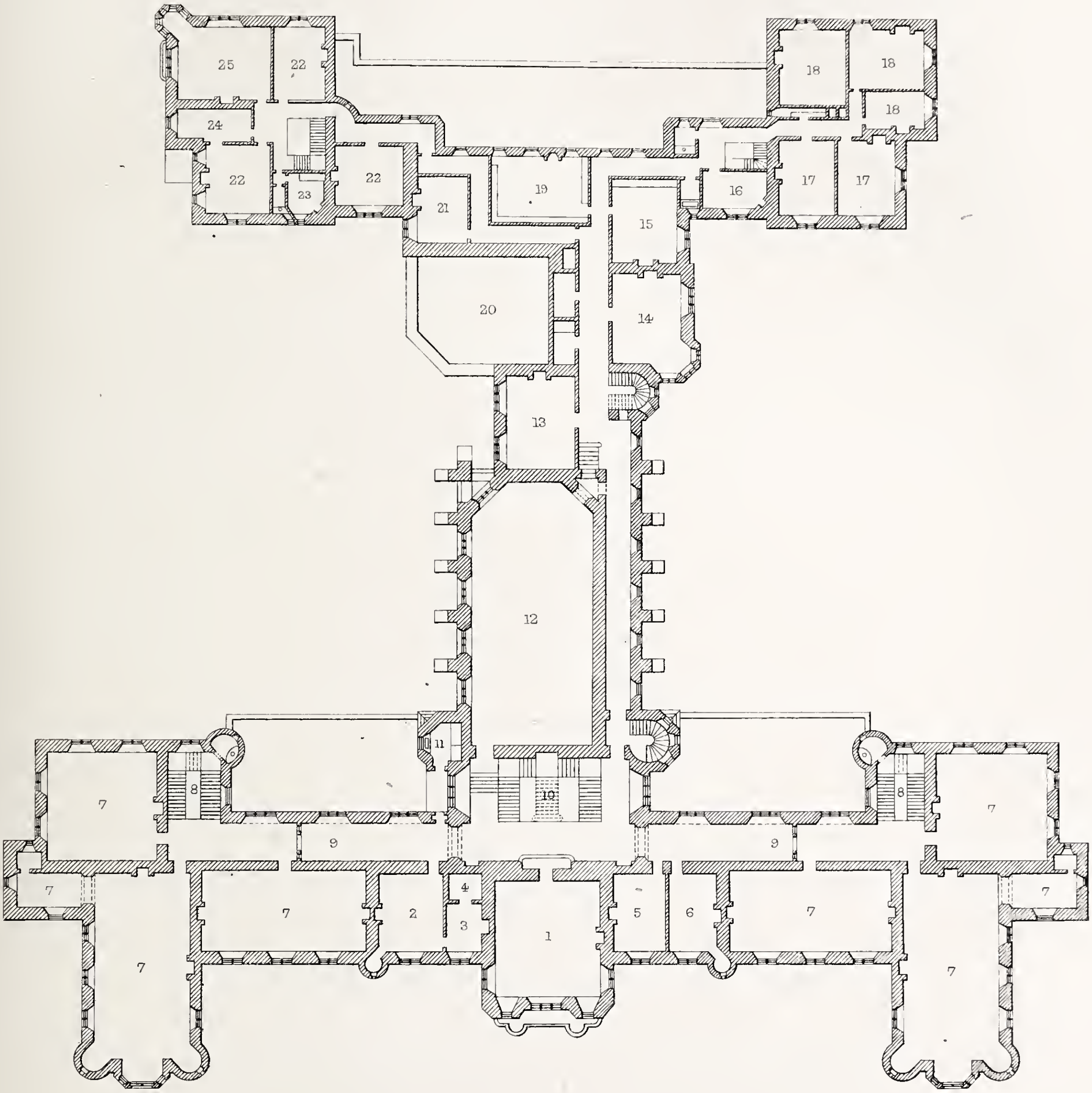
The Heating Apparatus, Wine, Beer and Coal Cellars are situated below the Apartments marked *

DAVID BRYCE ESQ R.S.A

Lithog^d for the R I B A by Kell Bro^s. London. E. C.

Fettes College, Edinburgh.

Plan of Class Room Floor.



REFERENCES TO PLAN.

1. Governor's Room.
2. House Governor's Business Room.
3. Charter Room.
4. Safe.
5. Visitors Room.
6. Masters Retiring Room.
7. Class Rooms
8 Staircase
9. Corridors.
10. Principal Staircase.
11. Coal Depôt.
12. Chapel.
13. Upper Servants Dining Room.
14. Matrons Room.
15. Work Room
16. House-Keepers Bed Room
17. Sick Rooms.
18. Women Servants' Rooms
19. Store Room for Linen.
20. Kitchen (continued)
21. House Stewards Bed Room.

H G's Residence.
22. Bed Rooms.
23. Bath Room.
24. Dressing Room.
25. Drawing Room.

100 50 0 100 200 Feet

DAVID BRYCE ESQ R S A

Lithog^d for the R.I.B.A. by Kell Bro^s, London. E. C.

APPENDIX.

THE FETTES COLLEGE, EDINBURGH.

By David Bryce, F.S.A., Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, April 24th, 1865.

Before proceeding to a description of the building, the plans and specifications of which are now laid before the Institute, it will be well to refer shortly to the history of its endowment, and the especial objects which the founder had in contemplation.

The late Sir William Fettes, Bart., died on the 27th of May, 1836, at the advanced age of eighty-six years. A native of Edinburgh, he commenced business there as a wine merchant and under-writer, in both of which branches he was eminently successful. Interested in the municipal affairs of his native city, he at an early age entered the Town Council, and, rising from one post of honour to another, was in 1800 unanimously elected Lord Provost of the city. He retained the office for a period of two years, and, after an interval of other three, during which he was created a Baronet, was again elected to the chief magistracy for 1805 and 1806. Retiring from business in the year 1800, he devoted the remainder of his life to the management of the different landed estates of which he had become the purchaser; continuing, however, to take an active interest in the public affairs of his town of birth. He died on the 27th of May, 1836, pre-deceased by his wife, and by the only fruit of their marriage, a son. Architect of his own fortune, he left property behind him, estimated at that date at about £166,000. sterling in value. He had, in 1830, executed a trust disposition and settlement, and thereafter appended to it several codicils, the last of which is dated 9th of March, 1836. He thereby disponed his whole estates, heritable and moveable, to and in favour of certain trustees for certain purposes. His wife having pre-deceased him, the main purpose of the trust, after paying certain legacies and annuities of no great value, is thus expressed:—"That the residue of the whole estate should form an endowment for the maintenance, education and outfit of young people whose parents have either died without leaving sufficient funds for that purpose, or who, from innocent misfortune during their own lives, are unable to give suitable education to their children."

Large discretionary powers were given to the trustees in the application of the funds thus entrusted to them; and, towards the end of the year 1863, they entered into contracts for the erection of "the Fettes College," having previously obtained from me the designs now lying before the Institute.

In preparing those designs I had, of course, primarily to keep in view the wishes of the testator, and to comply with the regulations made by the trustees in virtue of the authority delegated to them in Sir William's trust disposition and settlement. These regulations provide that the site of the building should be the grounds of Comely Bank, situated in the immediate vicinity of Edinburgh, and forming part of the trust property. It is further provided that the building is to be surrounded by at least twenty acres of land "laid out as garden-ground or play-ground." Fifty boys are to be admitted on the foundation and be maintained and educated in the College at the expense of the endowment, and other fifty are to be received as day scholars. The latter are to dine daily with the foundationers.

I may explain here that the College is intended to supply the pupils with a very high class education; and, although there are to be fifty boys upon the foundation, the building is arranged for an educational establishment suitable for the higher classes, and somewhat in accordance with the great English schools.

The site of the College is on the rising ground to the north of the Queensferry Road, and the building faces the south, having a fine view of the Castle and the ridges of the Old and New Town. It is situated in immediate proximity to the city, and about a mile and a half to the north of the estuary of the Forth.

A glance at the ground plan of the building will show that I have avoided the quadrangular form so frequently employed in similar institutions, as I have found it to be objectionable here on the ground of its exclusion of the sun and its tendency to create dampness and restrict ventilation. In its stead, I have adopted the form of the capital letter **H**, leaving all sides equally sheltered, and admitting alike both sun and air.

The front portion of the building, facing the south, is occupied as what I may term the educational portion of the establishment, and as dormitories for the foundationers. The connecting limb, or central portion, is occupied mainly by the dining hall and chapel above it, while the portion to the north, or back limb, is occupied by apartments for the domestics, with the head-master's or house-governor's residence forming the west wing. The south portion, the principal entrance to which is under the centre of the main tower, and between which and either wing extends a piazza, contains in the east and west wings play and work rooms, gymnasium, lavatories, bath rooms, &c., the remaining portion being occupied by porters' accommodation, and such like.

As before stated, the dining hall is situated in the connecting limb, on the ground floor, and is connected with the kitchen by a service room. It is approached on all sides by spacious passages, and by doors on either side from the play-grounds. The walls of the hall will be finished with oak panelled lining, and will support a panelled timber ceiling. The kitchen will be fitted up with all the modern culinary improvements, and there will be hoists for the service of the dining-rooms on the floor above. The apartments immediately behind the kitchen consist of sculleries, pantries, larders, and other requisite conveniences. The east portion of this north limb is devoted to the laundry department, with the women-servants' rooms above; and the corresponding wing to the west is, as I have already observed, occupied by the head master's residence. Owing to the northward slope of the ground, and the free space it affords, the steam boilers, heating apparatus, coal and other cellars, have been placed under the kitchen department.

The first pair floor is reached by a principal staircase in the centre, and one in either wing for the boys. The centre portion of this floor is appropriated to a room for the governors, a visitors' room, house-governor's room, and masters' retiring room, with three large class rooms at either end. The whole of those are connected by a main corridor. Above the dining hall, and entering from the central staircase, is the chapel. It has an open timber roof. Above the service room, &c., are placed the upper servants' dining room, the remainder of the cross limb and back wing being used as matron's and women-servants' apartments. For the house-governor's use, a private door from his house on this floor communicates with the rest of the building, so that he can have easy and ready communication at all times.

The south portion of the second pair floor is reached by the staircases at either end, and is devoted principally to dormitories and lavatories. The central portion, however, is intended to contain a museum, library, conversation and reading rooms. In either end of this part of the building are situated a master's parlour and bed room, thus giving the masters a direct superintendence over the boys. The arrangement of the dormitories on this floor is—I believe, at least—different from that usually adopted in educational institutions. Each foundationer on admission, being then between eight and ten years of age, is accommodated in "Dormitory Number One," where he occupies a mere cot, and is under the superintendence of a warder. Dormitory Number Two is for boys somewhat older, where their beds are placed within separate compartments, which are divided by panelled and framed divisions, and which have curtains in front, thus giving them each a small apartment. In Dormitories Nos. 3 and 4, when still more advanced, they are accommodated in small apartments, formed by panelled divisions, which are closed with doors. For the sake of better ventilation, these divisions are carried no higher up than 7 ft. 9 in. Before leaving the College, the more advanced pupils will be lodged in small parlours, or bed rooms, which are situated in the east and west wings of the three pair floor. The central portion of this floor is occupied by the infirmaries or sick rooms, the convalescent room, nurses' apartments, &c., and these can only be reached by a stair leading to them and the doctor's room from the basement floor.

Ventilation flues, coloured red and yellow upon the plans, are carried from every apartment to a main shaft, which is rarefied by a hot-water tank placed in the top of one of the octagonal towers at the side of the chapel. The kitchen and other apartments in that part of the building are ventilated by means of a shaft, through which a cast-iron smoke flue is led from the steam boilers.

In the construction of the floors and roofs, as will be seen from the sections and plans of floor and roof timbers, malleable iron couples and girders have been mainly used. Where the joisting enters the walls, and at the level of each floor, a levelling is made, on which fire-clay glazed sockets are built for the insertion of the joists and keeping them clear of the lime and damp, as the joisting only will be wedged in, and leave a free open space for air all round. The spire or roof of the main centre tower is also constructed with iron, and, for the purpose of thoroughly securing it, iron rods have been carried down the centre of the walls, and which, for the purpose of serving as lightning-conductors, are carried down to the foundation.

The building, on the exterior, is to be executed with irregular ashlar, dabbed on the face, while the mouldings will be polished. The stone is obtained from Callalo Quarry, in Fife. This quarry, although made much use of at one period, has in latter years been shut; but it is now re-opened specially for this work. The present contracts amount to £73,000. sterling; and altogether, in building, in addition, lodges, stables, racquet court, and enclosures, the trustees propose to expend about £100,000.

SOME REMARKS ON RECENT ARCHÆOLOGICAL INVESTIGATIONS AT ROME.

Communicated by J. H. Parker, F.S.A., Hon. Member.

Having only recently returned from Rome, Mr. Parker took this opportunity of offering a few remarks relating to his visit to that city. At the present moment the Pagan style was the fashion in Rome; and some of the best antiquaries there said they considered every work in Rome after the fifth century as modern; from which it follows they esteem nothing but what is Pagan. From the rebuilding of St. Peter's to the present time that style has always been and still is in fashion. That which is now going on under the name of *restoration* is, in fact, utter destruction. The ancient architects restored their churches century after century, but fortunately without doing much harm:—generally the exteriors remained to a great extent as originally built—till the advent of Pio Nono, under whose rule churches were *restored* by levelling them to the ground. This had been too much the case in our own country also until recently, so that we must not throw too many stones at others; but he might mention that one of the master pieces of Christian art, the splendid mosaic picture behind the altar of St. John Lateran, was threatened with immediate destruction this summer:—more room being wanted for the singers they were going to pull down the old choir and aisle of the fourteenth century, and put up a new and larger one.

During the last winter the remains of Christian architecture and art in Rome had been subjects of study and of endless interest and amusement to him. No book on Rome that he was acquainted with gave any account of the Christian architecture of Rome. It might be divided into two distinct phases—during the first millenium of the Christian era the gradual decline of Pagan art—with however a slight revival in the ninth century—but still from the time of Constantine, a gradual decline till the tenth century, when the only building remaining of that period is as low in art as it well could be, and the construction is as low in character as the Round Towers of Ireland. The only building known of the eleventh century is of herring-bone work. During the second millenium, or from the eleventh century, the grand revival of art began, and it is to this period only that Christian art properly belongs. This real Renaissance began at the extremities, Rome followed a century behind, and in that position she still remains. Some works in Rome of the Mediæval period were unrivalled, but they were distinct copies of English and French works of a century before, with this advantage, that they were enriched with the everlasting Roman mosaics instead of painting. These mosaics are of the most beautiful kind, executed partly in glass and partly in stone. But this ancient art is not appreciated by the modern Romans. In the church of San Lorenzo he had seen the only porch which the Cosmeti family erected, (with its elegant nude or detached shafts ornamented with mosaics,) utterly destroyed from the mere caprice of the architect; even the door itself is now walled up, and the monks complain that they are obliged to traverse the whole length of the church for every service, in all weathers, because the architect had blocked up the door near to their cloister. When he first saw this church of S. Lorenzo, after the restoration, (falsely so called), fragments of the arcades with the mosaic ornaments were lying strewn about the pavement of the cloister. He (Mr. Parker) having indulged in his usual habit of talking too much and speaking his mind too freely, these interesting fragments very soon after disappeared. He had ordered photographs of them, but in that he was disappointed. Another instance of disappointment from his talking too much, occurred in reference to the earliest Christian church in Rome—the church of Santa Pudentiana. It is called the mother of all churches, and known as the earliest foundation in Western Europe. Till recently few persons were aware that this early church still exists as a crypt under the present church. It was to English people a church of exceeding interest, having been consecrated by Pius I, being at that time a portion of the baths of Novatus, who according to the annals of Barmius had made baths in the house of his father Pudens. Thus evidence is afforded that this first Christian church was made in the house of Pudens, and it still exists under the present church, but filled up with loose earth to the tops of the doors and arches. Though the church had been made out of the chambers of the baths, he succeeded in discovering the nave and aisles. One of these chambers also remains, evidently made in a house previously existing, the brickwork of the original part being that of the first century of the Christian era, and the plastering of the walls upon both the original work and the alterations, with the painting upon it, corresponding with the character of the Palace of the Cæsars and the Baths of Titus.

With respect to this church constructed in the baths, he had been able to obtain only very imperfect information, and also imperfect plans and drawings; and those he had sent to the "Illustrated London News," as affording the best medium for their world-wide publication. It was his earnest wish that it should be known that this early church exists, and that His Holiness the Pope refused his permission to explore it, and withheld his signature from the necessary official sanction to do so, which had been obtained. Unfortunately in this case again he gave too free utterance to his feelings, and His Holiness was angry at the notion of an Englishman pretending to make a discovery, which His Holiness said was no discovery at all—he had known it years ago. He (Mr. Parker) had, however, mentioned the circumstance to the most distinguished antiquaries of Rome, none of whom were aware of it, and in none of the books to which he referred could he find any mention of this early Christian church as still existing; but on his return to London, in the library of the Athenæum, on referring to the Annals of Barmius he found a notice in two or three lines stating that a considerable part of the house of Pudens and the original church of S. Pudentiana was still existing in his time. The conclusion he drew, therefore, was that His Holiness was the only person in Rome who had read and remembered this passage in Barmius. As he had already stated this church was filled up with earth to the tops of the arches. He found those arches to be of the second century, made in a house of the first century; and above ground the apse of the existing church on the level of the street is made in one of the halls of the house of Pudens, in which the early Christians of Rome met for worship in the time of St. Paul. This hall is on a level with the street, and was made into a church in the fourth century, the primitive church being then made into the crypt. At the end of the upper church behind the altar is an apse with a fine mosaic picture of the fourth century. None of the early Christian churches in Rome were in so perfect a state as this; but it would seem that up to the time of Constantine all the churches were underground, and after that period, when the Christians could venture openly to show themselves, other churches were built over the original ones.

In further describing this church, Mr. Parker remarked that beyond the apse was a plain flat wall, of great height and fine brickwork of the fourth century, with three large hall windows. These windows had been bricked up, which he had little doubt was done when the hall was made into a church, the apse having been made immediately within them. [Professor Kerr inquired whether by an apse Mr. Parker meant a chancel.] Mr. Parker replied he meant the apse of the chancel; yet it was hardly what one would call a chancel. The apse was behind the altar. The nave had been rebuilt in the twelfth century, and again in the eighteenth, but the apse with the altar portion was preserved from the old church. At that time they showed a greater regard for the mosaics, but at the present time but little respect was shown for them.

Another remarkable example to which he would refer was the Church of Santa Croce, built in a portion of the Palace of the Empress Helena, one of the largest palaces in Rome, surrounded by fortifications. Considerable remains of the great hall of this palace exist, and Constantine built buttresses to support the wall, which had been injured by an earthquake. The church has been made out of the Prætorium or Hall of Justice, which had consisted of a parallelogram, nearly square, with arches all round, which were still to be traced. At one end an apse was added by Constantine, and against that there was one side of the cloisters of the tenth century, the only building of that century he had ever met with in Rome. There were traces of forty or fifty churches belonging to the first millenium of the Christian era. The interiors had been spoilt and modernized, as it is called, in the vilest taste, but the exteriors had, generally, been let alone, the usual construction of which was concrete of great thickness, faced with brick, and plastered inside. This was also the construction of the principal eminent buildings of Rome, including the Pantheon, the walls of which are 30 feet thick, and are composed of a mass of concrete faced with brick-work, with a number of arches to bind in with the concrete behind them. He found this concrete to be formed of very excellent lime and the roughest material they could get. In that way a concrete was made which was literally everlasting, for these buildings had stood under earthquakes and all the other tests of time to which they had been submitted. Wall and vaults together stood like a natural concrete rock.

Professor KERR, Fellow, wished to ask one question of Mr. Parker, for what he had told them was exceedingly interesting. He would be glad to know whether he considered the church in the House of Pudens established the fact that in the first century Christian churches there was an altar. His reason for asking the question was, because some people differed in the application of the term "Pagan" to the early churches. They might regard the history of the Christian Churches thus: that in their earlier days they were very simple in form, corresponding very much to the simplest forms of worship of the Church of England; that as Christianity became more and more fashionable it became more and more Paganised, till at the period of Constantine it was sufficiently Paganised to be made the religion of the Roman Empire.

Mr. PARKER replied, there was no direct evidence one way or the other; but that these early churches contained an altar he thought there was no reason to doubt. The altar was low and narrow, behind which the priest stood and officiated, and administered the elements to the people. The altars of these earlier churches consisted of solid stone tables, or rather tombs, with tables, altars, or slabs upon them: they were situated at the western end of the church, the priest officiating over them, looking towards the east, in accordance with the earliest Christian notions that the rising sun is an emblem of the resurrection. There was one circumstance he would mention, as showing that a spirit of economy prevailed at that period as now. The churches, prior to the sixth century, were built with very wide naves, but when works of repair were undertaken, and at a period when the expense of timber was increased, the old nave was divided into two or three portions, either nave and one aisle or nave and two aisles; acting upon the principle that the old timbers would do again by cutting off the unsound ends. The proportions both of aisles and nave were thus curtailed. Instances of this were frequent in Rome. The early churches were very plain, because they were mostly underground chambers, fitted up in the houses previously existing; and among the churches of Rome were a number of Pagan temples made into churches. He knew of no example of an original Christian church, built as a church, before the time of Constantine. As he had carefully examined the history of every church in Rome, he could safely say there is not one, and never was one, for Anasterius, in the Lives of the Popes, records the original foundation of all the churches, and he (Mr. Parker) had examined the remains ot every one of them.

He would call the attention of the meeting for a moment to one other subject. Previous to his illness in the spring of last year, he was requested by the Honorary Secretaries of this Institute to endeavour to obtain drawings and give a description of the Gothic portions of the Church of St. Etienne, at Caen.* He thereupon wrote to M. Bouet, and requested him to furnish those drawings; and within the last day or two he had received about fifty drawings of different parts of the church, which had been forwarded to him during his absence, including details of the towers, spires, and chancel, and the principal Gothic portions. He would add, as far as he could make out the date, from the history of the abbey, and from a comparison with Bayeux and Lisieux, that he thought these Gothic portions belonged to the last ten years of the twelfth and the first ten years of the thirteenth century. He did not know of more beautiful spires. They could trace the gradations from the Romanesque nave, (which he had before described,)—the rebuilding beginning with the choir, and getting more and more Gothic, till the decided Gothic prevailed, and was amongst the earliest and best Gothic which remained.

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* Upon the earlier portions of this building Mr. Parker has already favoured the Institute. See Sessional Papers, 1862-63, Part II, No. 2, with many illustratrations.

Oxford June 22 1865

My dear Sir

Mr Seddon refers me to you on the question which I came to attend a little time at the Syndicate Meeting on Monday. I am rather peculiarly situated — a short time before I was taken ill I was requested by the Secretaries to get up a paper on the [illegible] the "attire" or "horns" of [illegible] productions? I had given in the early [illegible] to complete the one [illegible] with the request of [illegible] parts — In compliance with the Board I made one and a very fine [illegible] the [illegible] requisite and a set of drawings, he has had me expensive during my illness [illegible] of 50 drawings — some of these very fine. I am not willing that these should be thrown away — what course [illegible] to the [illegible]

PAPERS

READ AT

The Royal Institute of British Architects,

SESSION 1865-66.

USUI CIVIUM, DECORI URBIUM.

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1866.

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TABLE OF CONTENTS.

TITLE.	AUTHOR.	DATE.	PAGE.
Opening Address	By A. J. B. Beresford-Hope, M.P., LL.D., F.S.A.	Nov. 6th, 1865.	1 — 14
On Iron-work—its legitimate use and proper treatment.	By William White, F.S.A., Fellow.	Nov. 20th, ,,	15 — 30
Art Foliage	By J. K. Colling, Fellow .	Dec. 4th, ,,	31 — 46
On Painting in connection with Architecture.	By T. Gambier Parry, Hon. Member.	Dec. 18th, ,,	41 — 56
Suggestions respecting the Roofs of Temples, called Hypæthral, at Ægina and Bassæ.	By John W. Papworth, Fellow.	Jan. 15th, 1866.	57 — 66
Account of the Restoration of the Dutch Church, Austin Friars, principally from Notes by the late William Lightly, Fellow.	By Edward I'Anson, Fellow.	Jan. 29th, ,,	67 — 75
Notes on a Visit to the Auvergne Churches.	By Edward I'Anson, Fellow.	Jan. 29th, ,,	76 — 78
On the Cathedral of St. Canice, and other Architectural Antiquities, Kilkenny, Ireland.	By T. Newenham Deane, Fellow.	Feb. 12th, ,,	79 — 87
On the Church of St. Stephen, or the " Abbaye aux Hommes," at Caen.	By J. H. Parker, Hon. Mem.	Feb. 26th, ,,	89 — 102
On the Water Supply of Ancient and Modern Rome.	By Rev. R. Burgess, B.D., Hon. Member.	Mar. 12th, ,,	103 — 113
An Enquiry into certain Principles of Architectural Physiology.	By D. O. Edwards, M.D., M.R.C.P., F.R.C.S.	Mar. 26th, ,,	115 — 130

TITLE.	AUTHOR.	DATE.	PAGE.
On some of the Ecclesiastical Monuments of Paris erected during the Middle Ages, and on the principles observed in their Restoration.	By G. R. Burnell, Fellow, M.I.C.E., F.G.S., &c.	Apr. 16th, 1866.	131 — 148
On the Evidence of Architects on the obstruction of Ancient Lights, and the practice of proof by measurement, with reference to recent cases in the Courts of Equity	By Professor Kerr, Fellow.	Apr. 30th, ,,	149 — 158
On Battle Abbey and its Conventual Remains.	By Rev. Mackenzie E. C. Walcott, M.A., F.S.A.	May 21st, ,,	159 — 164
Additional Illustrations of the Conventual Arrangement of Benedictine Abbeys.	By Rev. Mackenzie E. C. Walcott, M.A., F.S.A.	......	165 — 167
On the Practice of Architects and the Law of the Land in respect to Easements of Light and Air.	By Professor Donaldson, ex-President.	May 28th, ,,	169 — 191
Some Remarks on the Mediæval Antiquities of the County of Durham.	By J. Tavenor Perry, Associate.	June 4th, ,,	193 — 204

OPENING ADDRESS BY THE PRESIDENT,

ALEXANDER J. B. BERESFORD-HOPE, M.P., LL.D., F.S.A.

At the Ordinary General Meeting of the Royal Institute of British Architects, November 6th, 1865.

GENTLEMEN,—It is a relief to your President to feel that the Address of 1865 follows upon a year of rest—a year which, while it has not given birth to any particular reason for exultation, had, up to three weeks since, been equally devoid of any remarkable cause for sorrow and condolence. If there has been a Great Exhibition this year, it was one which was parted from us by St. George's Channel and the Race of Holyhead; and the exigencies of a huddled-up session, followed by a general election, have kept the collective wisdom of Parliament off from the fascinations of any art crusade, or of any art harray—things which sometimes run somewhat closely up into each other. This lull, temporary as it may prove, may be used by us as an opportunity for reviewing calmly and fearlessly the position of this Royal Institute, as the general exponent and mouthpiece of English architecture, and for considering the condition of our national architecture itself as it may be mended or the reverse, according as this Institute acts with unity, vigour, and wisdom.

I am ambitious for the honour and usefulness of the Institute, and as the result of this ambition I decline to rest where we are. We are all doing our best, and yet the Institute, with its ample prerogatives, its Royal Charter, and Royal Medal, its powers of examination, and its various prizes, with the distinguished names that belong to it, and the vast mass of most interesting architectural lore which it has conveyed to the world, has not yet risen to the summit of its duties and of its pretensions. The Institute ought to be, without rival, and without demur, the central regulating areopagus of architecture,—of architecture as a science, and architecture as an art; of architecture as practised by its professional votaries, and as studied by the amateur,—as loved by both,—throughout this imperial realm. The time should come when the absence of those letters which denote some grade in the Institute from the name of any one who practises architecture should be as much cause for enquiry as the absence of academic distinction from that of the clergyman who has the misfortune to be a "literate." Do not mistake me, and imagine that I am the mouthpiece of any policy of aggression; least of all that I wish to crush the free art-life which has given birth to so many other architectural and semi-architectural societies, all instinct with the energy which the pure love of science and beauty inspires, and many of them further nerved up by the conviction of a mission to fulfil and a dogma to teach. I wish them all prosperity and all liberty; at the same time I desire that they should all act as members of one system, moving harmoniously round one centre, co-operating as the volunteer forces of the great architectural army, looking up to this Institute, not as the tyrant whom they are pledged to bring low, but as the *Alma Mater*, ready to give all fostering care, at the cheap price of unsuspicious confidence.

We must not, however, shut our eyes to the difficulties attendant on the realization of such an idea. I believe that in accepting it we should have to extend our borders, and to create one or more fresh classes of membership for the proficients in arts related to, but not identical with, architecture. This enlargement would of course entail increase of labour; but as it would involve increase of members also, more backs, no doubt, would be found broad enough and willing enough to bear the honourable burden. There is in particular and emphatically one phalanx which I earnestly desire to see absorbed into our body in larger proportions than they have as yet been. These are the architects who, because the buildings which they construct are pre-eminently massive, because they are buildings mainly devoted to the developement of the grand material interests of the nation, because their measurement may be the furlong and not the yard, therefore abjure the name of architect to borrow the incongruous appellation of engineer. Do not mistake me, and imagine that one single thought derogatory to the grandeur of those constructions or to the genius of the men who planned them crosses my mind while I pen these sentences. The man would be unworthy of the name of Englishman who was not proud of them. All that I say is that I demur to the appellation under which their constructors have produced them. What is an engineer? I look to Johnson, and he tells me: "Engineer, (1) one who manages engines; (2) one who directs the artillery of an army," with a reference to Shakspeare's engineer hoisted on his own petard. I seek further help from Richardson, but he only provides me with an illustration borrowed from South: "In like manner, as skilful an engineer as the Devil is, he will never be able to play his engines to any purpose, unless he finds something to fasten them to." We all know and we all admire what our great civil engineers have done, and we lump all their grand works under one term, and call it "engineering." But it is surely just as incorrect to designate every thing that Stephenson or Brunel accomplished engineering, as it would be to call all the works of Michael Angelo architecture, or painting, or sculpture. Michael Angelo was great in all constructive and plastic arts, but the versatility of his greatness did not bring those arts nearer together in themselves than they were before. So the patriarchs of modern engineering have mapped the roadways, invented the rolling stock, and designed the buildings, all of which in different ways go to make up a working railroad, just as an old architect might have built, painted, and carved a cathedral or public hall. The old architect thus showed himself to be architect, painter, and sculptor. So the civil engineer proved himself to be a surveyor, in laying out the line; an engineer, properly so called, in constructing the engines; and an architect, in designing viaducts and stations. The name surveyor has no doubt gone out of fashion as applicable to the person who plans any very large works, and if the world prefers to substitute the designation engineer, I do not object. My immediate point is that the world should not continue to deceive itself with the belief that Stephenson and Brunel were not architects—self-made architects, it may be, just as the mathematician Wren and the physician Perrault were self-made architects, but, like those worthies of the seventeenth century, great architects. The notion that because to them architecture came without the usual training, therefore the engineer is for the future to dispense with the trained and learned architect for the construction of buildings whose monumental elevation gives its colour to our age, is a wrong on our whole craft of architecture, against which it is right to make an earnest protest. But you will ask, what is this protest worth, and what is the practical remedy with which you wish to follow it up? How will you mend the state of things by inducing a number, more or fewer, of our civil engineers to join this Institute? Be assured that I propose no such trivial palliative. I wish the world, eager enough as it is in general for subdivision of labour, to see that in its creation of the new profession of civil engineer it has been false to its own principles, by overweighting the responsibilities of a calling which, growing as it has done with the growth of modern science, may be almost called a new discovery, with those of the old time-honoured one of architect. The mischief of this course is only making itself evident:—

> "Decipit exemplar vitiis imitabile."

The great engineers overwhelmed us with the rough grandeur of their huge style; able but less eminent successors may but stifle us under the weight of heavy disproportion and unscholarly nakedness of detail.

The question of architect or engineer is not a mere fight of words. There are engineers who will build commendable structures, and architects whose works may be contemptible. But men's merits do not affect the value of principles. Architecture is the calling which, next to that of poet, dives deepest back into the young world's gulf of ages. As it moves on it spins out as part of itself that golden chain of association which ties together the ancient and the new, the foreign and the home-born, the beautiful and the useful. So an architect's education should be based on the broad foundation of history, science, and imagination. The liberal languages and the literature of other lands and times should be storehouses out of which he may bring the treasures with which he makes his handiwork loveable and true. Engineering repudiates the past, or uses it to point a self-exalting contrast. I do not say that engineers themselves do so, but this repudiation is the necessary price at which the constructive part of the engineer's business can any longer be formally divided from architecture.

Is it not, then, more necessary for us to dare to speak the truth, and to believe that our engineering friends will bear to hear that truth. We attack no vested interests, we depreciate no living man's work, when we say that the vast monumental structures of this glorious nineteenth century ought pre-eminently to be designed by men who have, as architects, learned how past great architects grappled with bigness, men who have studied Egyptian Thebes and the Colosseum, the Pont Du Gard, the Castle and Bridge of Avignon, Conway and Durham Minster. Let it be our office to revindicate for architecture all works of piled material, either containing chambers or else cast in architectural forms, whether they be of arched or trabeate construction. The engineer legitimately claims the level and the gradient, the earthwork, the roadway, the culvert, and the breakwater.

These considerations lead us to a topic which ought on its merits to be faced within the Institute, the relation of the society with the Royal Academy. It is one of the questions which it is the fashion to call delicate, but I see nothing delicate about it, if it be handled in candour and good temper. I approach it in the spirit of the utmost good will towards the Academy, although believing that I best show my good will by declaring myself a believer in the desirability of certain reforms within that distinguished body, which I desire to see always filling the exalted position to which it has the means of doing justice, so long as it continues to realize that rank and wealth involve responsibility with corporations no less than with men. The dualism involved in a Royal Institute of Architects such as I have forshadowed, alongside of a Royal Academy of Arts including architecture, is, I freely grant, at first sight, puzzling; but I flatter myself that I see the way of reconciling with advantage to each other, and to pure architecture, as well as to the mixed arts dependent on it, the continuous co-existence and the progressive developement of the two great societies. Consider the broad differences which respectively mark off the constitutions of the two bodies. Both are, speaking generally, elective; but the election at the Academy means the choice of one distinguished man from out of many; while with us it is little more than the safeguard against improper nomination. Otherwise the Institute is in theory the collective body of all architects; the Academy a selected council of artists, among whom architects only form a certain, and I venture to add, too small a portion. But then we may be told, let the number of architect Academicians and Associates be augmented, and then the Institute might be suppressed. Emphatically *no*. The Academy is a great advantage to architecture—what that advantage is I shall proceed to point out; but the Institute is a necessity. I have just been revindicating for architecture much which it is the fashion to call engineering; but this revindication strengthens the fact that, while architecture is an art, it is also what, for want of a better term, I must call a business or craft.* It is this perpetual combination of the *utile* and the *dulce*, the perpetual necessity of adapting style, ornament, and proportion to construction, and of so manipulating construction that it shall not sin against beauty of detail or mass, which makes architecture the peculiarly complicated and scientific thing which it is—an art, and something more than an art. It is this which makes it so fascinating to those who are really embraced by its spirit; while, on the other hand, it deters so many amateurs, who find it very much easier to set up as connoisseurs of painting and sculpture than to risk being discovered as incapable of apprehending the mechanical exigencies of building. Again, the architect has also, as a member of the commonwealth, charged with care for the life, health, and convenience of its various members, to make himself at home with sundry legal matters of which an Academy of Arts could have no cognizance, but which are the legitimate function of an architectural corporation.

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* *Profession* applies to the person who professes, and not to the thing professed, and will not, therefore, serve my turn.

Of this mixed craft and art then the Institute can be the efficient regulator, as the Royal Academy, a purely artistic body, cannot be. On the other hand, something like the Academy is just what is wanted for painting and sculpture, and being so for these two arts it was seemly that it should also include architecture, otherwise the exclusion would have seemed like a denial of its claim to be a liberal art. Nay more, at the time when the Academy was founded and architectural art in this country was passing though a time of great depression, I have no doubt that the step was eminently salutary. I proceed further, and say that, even now, when architecture occupies in every way a very different position from what it did in the early times of George III, we are more likely to be the better than the worse for the Ephorship of the Academy. Still, it is well that we should know what the Academy can do, and what it cannot. It cannot handle the many professional matters which constantly come before us. It can give lectures on the theory of architecture; it can teach a school of students on the art side of architecture; it can give prizes. We can also do all this, and we do a great deal of it. We shall do more when our School of Technical Teaching, on behalf of which a mixed Committee was organized, gets fairly to work, as I trust it may do this session. Moreover, the Academy can and does specially do two things, neither of which we are so capable of carrying out. The first of them is not a part of its specially architectural functions, but it is of essential importance to the architect. The Academy possesses a life school, in which even the architectural student can acquire that power of drawing the live figure, which I am convinced ought for many reasons, direct and indirect, to form a portion of the *curriculum* of every one who desires to master architecture as an art and not as a business.

The next thing which the Academy can and does do, is to hold an Exhibition. No doubt if we had as large an income relatively as the Academy, we could hold our Exhibition, and no doubt if the gallery in which we held it were one of the public buildings of London, we could make it a much better exponent of architecture than the Royal Academicians have ever made theirs. It would be affectation not to say what we all feel, that the architectural portion of the great annual display fails in doing justice to architecture. The best evidence of the shortcomings of the Academy is to be found in the independent Architectural Exhibition, which has been carried on for several years with so much zeal, and has for a considerable time been held on the ground floor of the building which lodges us. Still we must all confess that this independent Exhibition does not in itself completely fulfil the requirements involved in an annual London display of architectural progress. The reason is not far to seek, and it is no fault of the promoters of that Exhibition. Imperfect as our representation in Trafalgar Square may be, it still stops the way; it has prestige and antiquity, and so, while defective in itself, it keeps the younger enterprize from filling the void. Accordingly we say, let the Royal Academy, while seeking a new habitation, bear in mind that it can win both honour and popularity by making its Architectural Exhibition each year a vigorous reality, alike for the general visitor and for the student. I am sure if it embarked on this course, it would find no heartier co-operators anywhere than within the walls of this Institute.

In the evidence which I gave before the Commission which sat in 1863, to enquire into the condition of the Royal Academy, I urged its aggregating to itself associates out of the ranks of working artists.

If it should take any such step, we, I am sure, in no spirit of rivalry, would also consider how we might enlarge our ranks, so as to admit the members of such professions into some regulated membership.

I have adduced instances of the peculiar work which we might wisely leave to the Academy. Let me now refer to two fields of labour of our own, in which we especially can do much good, but which would be quite beside the scope of the Academy. Air and light have an importance at once legal, sanitary, and architectural. That the Institute should have had a Committee sitting on this question is a matter of unmixed congratulation. Only let me offer one caution—be not content with simply making a report, once for all, on a matter which must be continuously watched through its many ramifications.

The conservation of Ancient Monuments, on which also we have a Committee appointed, is happily a responsibility which is now universally recognized. But it is one thing to recognize and another to perform. A former generation destroyed without shame and without consciousness. Our present generation is too often in the habit of changing and spoiling and bedizening, and then of asserting with a complacent smile that it has only been restoring. Some of us have had our attention lately called to the painful fact that, with the very best intentions, the authorities of Lincoln Minster have lately been flaying alive the surface of that noble structure. Professor Willis, at the late Archæological Congress at Dorchester, laid down, in discoursing of Sherborne Minster, the true and exact law of treatment to which churches ought to be subjected—conservative alike of the fabric, and yet regardful of the solemnity and the exigences of their still living use. The paper put out by our Committee takes up the same position. Neither this paper nor the Professor handled the restoration of secular buildings; and so I hope we shall not pause midway, but instruct the Committee to give the possessor of every castle, every hall and manor-house, and every grange, practical and straightforward advice how to live and let live, without damage either to his own health and comfort or to his archæological allegiance. No doubt this is a much more delicate problem than that of church conservation, where the fabric is either restored within its original unchanged walls, or else merely enlarged by aisle or transept, in accordance with the original *motif*, while house conservation is complicated by ever varying necessities of family, and social station, of ventilation, drainage and smoke, for which no law can be laid down which can systematize the amount of necessary alteration, and therefore it is all the more necessary that some code of general principles should, if possible, be provided. The necessity has become more apparent, since, in an ever increasing ratio, farm-houses situated in counties proximate to the capital, or to chief towns, are snapped up if near railroads and turned into villas. These houses are frequently interesting specimens of Mediæval or seventeenth century architecture, sometimes perfect and sometimes disguised, which the judicious restorer would preserve and enlarge, while in the hands of the ignorant builder they would be doomed to hopeless destruction.

This sketch of the relations of the Institute to external powers would not be complete if I did not comment upon that Ministry of Public Works which has gradually grown up out of the old office of Woods and Forests. It has from time to time been argued, that, in order to avoid the vacillations and inconsistencies seemingly inherent in a fluctuating change of chiefs, there ought to be a permanent head of the department of works. I am decidedly opposed to any such arrangement. Not only is a permanent head to a great department antagonistic to our political instincts and traditions, but I believe that in this case the innovation would defeat its own object. The man who is originally appointed must have some art-notions or other of his own, or else he is palpably unfit to get the place at all. These notions may be good or they may be bad. Anyhow, if he is irremovable they will be ineradicable, to the discomfiture of all opposing schools of thought. At best we should perpetuate sameness and tameness, at worst ever recurring clique and manœuvring. Besides, those who argue for the permanent chief, forget that in all public offices there is an element—often an overpowering one—of permanence in the irremovable second man. My own remedy would be based on the opposite principle, of exalting the attributes of the Minister of Works, treating his post as a necessary component, not merely of the administration, but of the cabinet, increasing his responsibilities, multiplying his inducements to do well, and withal hedging him round with such constitutional safeguards as a perpetual oversight by the Institute and the Academy, not to mention the still more severe and formal one of Parliament itself.

The Commissioner of Works is sometimes in the cabinet and sometimes not, and whether in or out of the cabinet he is in theory only a subordinate of the Treasury. This is plainly wrong, for it pulls down the importance of the office, and consequently checks young men who are going into public life from really studying art questions as a channel of political advancement, not much inferior, in its openings, to heavy statistics or colonial grievances. Then modern educational developements have accumulated a large amount of mutual responsibilities, more or less referable to architectural art and its cognate pursuits, between the State and the people, which, if imposed upon the Minister of Works, would fill the hands of the office and of himself, and justify the suggested increase of his dignity. But by some freak the wise men, who busied themselves a few years ago in re-arranging the public service, passed over the First Commissioner, and instead created an anomalous semi-minister, under the ambiguous name of Vice-President of the Committee of Council, to divide his time between high art at South Kensington, and parochial school squabbles in general over the remaining kingdom. I give nothing but praise to the noble collection at South Kensington, while, at the same time, I say that its wants have no relation to the department of state under which it is placed, and I claim that this museum, with the appendent art schools, would more congruously be made a function of the Minister of Works than of the Vice-President of education. Let the departments be thus re-distributed, and the need for the latter never very well understood nor popular office falls to the ground. For the purpose of moving the really educational votes in the House of Commons, the Lord President himself, rid of his art responsibilities, would want, and ought to have, a Parliamentary under-secretary, but that official need not be of weightier calibre than the Secretary of the Poor Law Board. If the Minister of Works were expanded, as I propose he should be, into an undoubted and constant member of the cabinet, he should also have assigned to him a Parliamentary under-secretary, to move estimates and make explanations; and then the department of works might be filled by a peer, if the fitting man turned up in the House of Lords. We should know how we stood towards such a minister, as we do not with respect to the actual First Commissioner. It would then be our duty, in conjunction with the Royal Academy, to see that, in the remodelling of the office, a definite standing should be given to those great societies, as the perpetual Attorneys-General and referees of architecture at the bar of the administration. Thus the liability of the office holder to be changed would check clique, and the fixity of his standing council, would obviate fickleness and inexperience.

Let me now say a few words upon a detail of considerable importance to architecture,—the International Exhibition which it is proposed shall be held in Paris in 1867. Many here present to-night no doubt recollect the trouble that was taken in this Institute, and elsewhere, to secure an adequate recognition of architecture as the great material symbol of civilization at the London Exhibition of 1862. The result was not all that could have been wished for; nevertheless much was achieved on the British side,—the only side with which we had to do. Not only a highly interesting and overflowing gallery of architectural designs was furnished, but at various points of the ground floor, notably in three special courts, and all up the nave, such large fragments of buildings in progress as were noteworthy by reason of form or detail, and even smaller buildings—like drinking fountains—in their integrity, were exhibited. Compendiously architecture, as architecture, made itself felt on the British side of the Exhibition, as it would not have done if the professors and the lovers of architecture had not in time bestirred themselves. I turned accordingly with anxiety to the prospectus of the French Exhibition, which has just been re-printed and circulated from South Kensington, to see if it indicated progress or retrogression since 1862 in respect of the due recognition of architecture as an elemental idea in the general arrangement. It is my duty to report that I am filled with grave apprehensions that, if that programme is to be acted upon, we shall find that recognition even less complete than it was in 1862. Of course allowance must be made in reading this document for that love of playing at scientific arrangement, which among foreigners sometimes tends towards something not very unlike pedantic fussiness. In one respect I am glad to say that the Exhibition of 1867 is a marked improvement upon its predecessors—it will be truly universal—by breaking down the geographical divisions which converted its predecessors into what a man given to playing upon words might have called a map of the world upon *Mercator's* projection, and by ranging class against class in direct cosmopolitan competition. Here, however, I must pause in my praise, looking at the programme with an architectural eye. The prospectus ranges the exhibition in ten groups, subdivided into ninety-five classes. What an architect might have marshalled together under the great group of architecture is dotted up and down the list as follows: Group 1 is entitled "Works of Art," and divided into five classes, of which No. 4 is headed "Architectural Designs and Models," to be placed in the first gallery of the building, and is thus epitomized:—"Sketches and details; elevations and plans of buildings; Restorations based upon existing views or documents." I should have mentioned that in a previous class termed "other paintings and drawings" occur "Cartoons for stained glass and frescoes," while there is another class of "Sculpture and die sinking" which may cover architectural sculpture, which has otherwise no distinct place. Class 9, in group 2, introduces us to photographs of buildings. The third group is headed "Furniture and other objects for the use of dwellings," and includes thirteen classes, which in their turn include a mass of miscellaneous articles, which it is difficult to imagine could not be better subdivided. The "Upholstery and decorative work" class starts with "Bed furniture and stuffed chairs," and closes with "Furniture, ornaments and decorations for the service of the church." The next class is designated "Chrystal, fancy glass, and stained glass," and also runs from the secular to the sacred, from "drinking glasses" to "stained glass windows,"—the cartoons for such windows being, as we have seen, ever so many classes back. After exhausting other materials the classifier seems to have thought that the time for metal had arrived, and with a true system-monger's instinct he begins from the beginning with a class of "cutlery—knives, pen-knives, scissors, razors, &c.—cutlery of every description," and goes on to recapitulate in subsequent classes "church plate," "plate for the dining table," and "statues and bas-reliefs in bronze, cast iron, zinc, &c." I am sure you will admire the philosophic rigour of the classification, which ranges "razors and bronze statuary" side by side, and calls them both furniture. The anti-climax of the furniture group is a class of leather work and wicker. A long sweep brings us to the eightieth class of "Civil engineering, public works, and architecture," (architecture you will note coming after civil engineering) in the large group of "Apparatus and processes in the common arts," in which a miscellaneous catalogue tails off with "Models, plans, and drawings of public works, bridges, viaducts, aqueducts, drains, canal bridges, &c., lighthouses, and public buildings for special purposes,"—as if there could be a public building without a special purpose!—"buildings for civil purposes; mansions and houses for letting; lodging houses for the working classes, &c." I ask you, as men of common sense, if this elaborate catalogue, coming where it does, and contrasted with the vague generalities of the so-named architectural class in group 1 does not indicate the subordination of pure architecture to so-called engineering? Another jump brings us to the last class but two, No. 93, which it seems is to be placed in the "Park," and is termed "Examples of dwellings characterized by cheapness, combined with the conditions necessary for health and comfort," and is divided into two heads; "Examples for dwellings for families, suitable to the different classes of workmen in each country," and "Examples of dwellings suggested for factory hands in cities or in the country."

We shall be but guests at Paris, and so neither courtesy nor possibility allow us, I suppose, to make any formal opposition to a scheme already so elaborately prepared and officially published. We can only bear it and make the best of it. As your President I have the honour of being one of the British Commissioners, and I need hardly tell you that my most strenuous exertions shall be devoted to furthering the good cause of Architecture. I should advise the formation here at as early a date as convenient of an Exhibition Committee. This Committee ought to originate within the Institute; but, I think you will agree with me, that it might well contain an addition of co-operators from the cognate societies. If such were formed it would be my constant duty and pleasure to be the representative of its wishes at the Commission. In any case, let every British architect, let every British architectural sculptor, metal worker, wood carver, glass painter, and ceramist, gird himself up for a victory upon a foreign soil.

I must now offer a few remarks upon that which is even more important than the details of architectural administration, namely, the condition among us of that art in whose behalf alone this administration possesses any value. I am glad to be able to speak in a hopeful tone, and I am glad that the improvement which prompts that tone is one upon which I can insist without trenching on that impartiality which the position, in which you have placed me, demands. To whichever side the victory in the battle of styles may verge, this much is certain that the truth of architecture has been made more precious in our eyes, and her fertility of resources has been enhanced in consequence of the conflict. All sides are now agreed that material ought to be real, and all sides are anxious to enlarge the list of real materials. Variety of colour and variety of material in the same building has by this time become a question merely of degree; the sky line is appreciated and studied, the catalogue of plants available for the working artist's chisel is no longer limited to the acanthus and the honeysuckle. Finally—The painter and the sculptor are, as in great old days, both of them welcomed as brethren of the architect, and co-operators in the broad idea of the completed construction—not merely as the parasites who are to fasten on the finished pile.

No doubt, with the single exception of the recognition of the sky line, the acceptance of these incidents does not amount to the demonstration of improvement in that which is of the chief importance in architectural art,—composition. It is possible to conceive the world's noblest design carried out in cement, while the vilest nightmare might be embodied in a façade of marble and serpentine, bristling with sculpture, and bedaubed with gold mosaic. Yet, indirectly, the consciousness of variety in his materials, and in his permitted details, and the responsibility thus laid upon him to make his use of all, must strengthen the heart and heighten the intellect of the composer, for opportunities make men, as often at least as men make opportunities. As far also as truthfulness of material comes into question, a tender conscience in avoiding shams will also breed a manly truthfulness in the composition of the mass; for it is untrue to nature that the man who sees no vice in palming off plaster for stone and marble, and graining for oak, should be very scrupulous about the proportions of the mass, or the purity of his details, should he see a short and easy way open to vulgar popularity through the lavish employment of gaudy and meretricious forms.

If what I have said be true, we may expect to see the fullest proofs of the improvement in London and other large towns. Of the condition of London architecture, I am willing to think more favourably and anxious to speak more hopefully than it is the fashion to do in some quarters. Undue depreciation is as little clever or original as undue laudation, while it is, if possible, even easier. No man is more conscious than I am of the infinite amount of lost opportunities which have to be made up in London, or of the ineffectual manner in which these opportunities have too often been taken in hand. But of late years, at all events, London has been shaping itself into that form of beauty, of which alone, from many reasons, foremost of them our civil liberty, she is at present capable—the beauty I mean of picturesque variety. We know how under different political circumstances foreign cities are forfeiting their old picturesqueness in order to don the aspect of official regularity. London, on the other hand, is growing out of an irregularity of plan in which, speaking generally, there was no architectural character into one in which irregularity has become picturesque. Of course a vast number of the new London buildings will not stand criticism. But in which of the large old picturesque cities do we find the majority of the houses really good architectural composition? It is the ensemble, and not alone the merit of each component, which gives the general effect to cities, such as Bruges or Amsterdam.

The first feeling of the stranger who comes unexpectedly upon the sumptuous palaces, which are, for example, growing up in that dingy and narrow thoroughfare, Lombard Street, is probably regret that they should have been dropped down into a corner, which seems to preclude the appreciation of their merits. On second thoughts he may, however, pluck consolation from the reflection that it was in narrow thoroughfares like Lombard Street that the buildings which give their fame to cities, such as Verona or Genoa, were planted, and that the picturesqueness which the traveller finds to admire in them is in no little degree enhanced, whether truly or in imagination, I do not now concern myself to ask, by the narrowness and irregularity of the ancient streets of these cities. Perhaps in coming time, when London shall house by house have been rebuilt, as we are now rebuilding it, and when a little of the mellowing of time shall have passed over those buildings, the curious traveller from the antipodes may visit London, not to sit upon the broken arch of London Bridge, but to drink in notions of old world picturesqueness from the houses of Lombard Street and Mincing Lane.

In what I have been saying I have confined myself mainly to the development of domestic architecture upon existing lines of streets. If, for example, I were to speculate upon the razzias and rebuildings which follow on the importation of railroad termini into the heart of the town, I should engage you in a maze of conjecture of which I feel that I have no time to seek the clue. The architectural future of the Thames Quay is a problem which ought to fill us with anxiety: the material advantage of the great enterprise is beyond a peradventure; the artistic gain which may be made of it remains to be gauged. It is a curious reminiscence that when the Thames Quay was first advocated in the House of Commons some forty years ago by Sir Frederick Trench—a name to be always had in honour for the courageous and constant zeal with which its possessor continued to advocate an improvement which he was not destined to see completed—it should have been opposed by Sir Robert Peel in the interest of the streets running down to the Thames, and supported by Lord Palmerston. Were I to enter upon the new phase through which religious art is passing in London, as well as elsewhere, I should have still more to say, which, however, I think it is better not to say. Were I further to talk of that feeling of respect for the ancient monuments of the metropolis, which has prompted so general a restoration of them, my anticipation of London's architectural worth would be still further enhanced. The epoch which witnesses simultaneously the decoration of St. Paul's, of Westminster Abbey, and of the under-croft of St. Stephen's Chapel, the restoration of the Tower, and Guildhall, of the Temple, Austin Friars, and St. Bartholomew's Churches, and the Savoy Chapel, and the resurrection of Charing Cross, is one in which the spirit of reverence for old forms of beauty must be abroad.

Next year the Archæological Institute holds its congress in London. It is well that we should be able to meet it with a confident spirit in a city which has not been untrue to its inheritance of ancient buildings. The pursuits of this society are to a great extent parallel with our own, and I am sure we shall cordially welcome a gathering of which a main object is the complete investigation of the monuments of architectural antiquity in and around London.

I have been the more anxious to invite your attention to the architectural condition of London, because next session will in all probability decide whether the capital is to be enriched with a great public building of undoubted excellence, or afflicted with one of costly mediocrity. The nation is going to rebuild its Law Courts, and mass them in one pile. I do not now question the site selected. This is, according to the modern phrase, an accomplished fact, and it is enough to say that the area chosen is one well suited for a magnificent and commodious structure. I say nothing, though I might say much about the method to be adopted in selecting the architect. I do not claim to dictate the style, for I trust that whatever style may be chosen, architectural truth will not be sacrificed. If the building is to be classical, classical must not be interpreted to mean a modern house, with floors below, and chimney pots above, ill concealed by barricades of pillars, fencing off light and air from the unhappy occupants. If it is to be Gothic, Gothic must not be handled as the style which enforces narrow casements and diamond panes, turrets that lead to no where, and gurgoyles that spout no water. Under any condition we claim a building which shall tell the tale of its own destination, and indicate the puissance of the nation in whose behalf it has been raised. We claim—what Manchester, out of merely a county's resources, has so generously provided—a palace in which the disposition of parts and the ornamentation spring from the destined use; in which the law courts and the great hall shall stand out from the general structure; in which the corridors shall be lofty and wide, the staircases easy and dignified, the subsidiary chambers many and accessible; acoustics, light, and warmth, and ventilation all well attended to, and after all these utilitarian requirements have been satisfied, in which proportion and material shall all be of the choicest; in which form and colour, sculpture and painting, shall combine to beautify the pile and leave it a living chronicle of the great growth of that sublime spectacle—the world's wonder and envy—English law, fearlessly and solemnly administered by English judges without spite and without favour, unbiassed by Crown or mob, or armed battalion. If the building shall fall short of this ideal, great will be the scandal and the misfortune, on whomsoever's back may lie the blame of the miscarriage.

If it were only for the proximate erection of the Palace of Justice, next season would be an important one to us. But in this age of changeful activity it is not needful to look to any one incident as the text on which to preach more vigilance, greater exertion. We are all proud of our Institute; we all acknowledge its importance; we all are conscious of what it has done, and of what it might do which it has not done. Let all of us then, laying aside self-seeking and mutual jealousy, sloth and fear, unite with one heart, cheerfully and magnanimously to promote the best interests of architecture as a science and as an art, and to build up this Institute as a guarantee to ourselves and to the world that architects shall respect and the public acknowledge the just claims and genuine character of that science and that art.

Professor Donaldson, Past-President, rose and said: After the manner in which the President's discourse had been received by those present, he should not presume to offer one word in eulogy of the various topics introduced, of the manner in which they had been treated, or of the interest they possessed in the minds of those who had listened to them. The President had handled the several subjects in a broad and distinct way, with much instruction to the members, and he doubted not it would be to all a stimulus through the coming session to carry out the principles so ably laid down. There were one or two matters which he (Prof. Donaldson) regarded as of peculiar importance, on which he would venture to say a very few words, particularly on the subject of Architecture in reference to Science and scientific associations, and Architecture in reference to Art, and its connexion with art institutions. In the first place the President had alluded to engineers, so called, as essentially forming a part of the architectural body. That was quite true. The difference between the two professional bodies had arisen from various circumstances, but the science of engineering had taken so large a development, and assumed so much importance in the present day, that it was thought worthy and just to those who cultivated that special branch of science, that they should be recognised as of a distinct class, worthy of the attention of the public, and which should be called by a separate term. The term "architect" was honorably recognised by engineers. They found that naval architecture formed a portion of the establishment of the Admiralty. There was in existence an Institute of Naval Architects, showing that the science of conception, the science of invention and combination of parts, was one of very high value, and sufficient for them to claim the title of Naval Architects. It had long been his feeling to combine in the architectural body all who had produced works having reference to architectural beauty, in size of architectural importance, or which possessed any architectural sentiment at all; and from the very origin of this Institute he had been desirous to get in, as members, those engineers who had erected buildings, which might be called monumental edifices. They might be defective in one part or other, in the mass or in detail; but still there were large masses of railway stations, magazines in the dockyards, and workshops in the Government establishments which evinced considerable architectural ability. The buildings erected by Sir John Rennie in Plymouth dockyard, in particular, might be referred to as being of a fine architectural character, and if left as fragments of a past century, would be looked upon as remarkable erections of the period. Therefore, whether it was engineering in the civil service—whether marine engineering or military engineering—whatever it might be, to them the name ought to be worthy, and the question they should ask themselves was, "Has that man produced an architectural work worthy of placing him in the position of being a member of this Institute?" Away with jealousy as to terms! They should recognise that man as worthy who had done a worthy work! There was another consideration to which the President had called attention, that was with reference to the Royal Academy especially. It was to him (Prof. Donaldson) matter of deep regret that architects had not sufficiently looked upon their position as artists, and that they should wish to disassociate themselves, so much as they had done, from the Royal Academy. When a young man he passed three years in the schools of the Royal Academy. It was a very happy period of his life. He formed connections and associations then, and he believed gained knowledge in art from being connected with young men of that period, who had since distinguished themselves as painters and sculptors. It was therefore, in his opinion, most desirable that the young members of their profession should, by associating in their studies with painters and sculptors, and in an atmosphere of art acquire knowledge as artists, beyond mere technical knowledge as architects. He felt that the Royal Academy was to be regarded as an *academia artis*, where art should be taught in its very highest culture. In this Institute they encouraged the study of architecture, and gave premiums and rewards for drawings of designs, but they had no pretensions as a school to teach students how to compose, how to draw, and how to improve themselves as artists. The meetings of the Institute were periodically held, and the students had the privilege of having practical papers read, and also the discussions that took place upon them; but an *academia artis* they certainly were not. It was most desirable, as the President had said, that they should, if possible, draw to them and associate themselves with members of other kindred bodies, as the best means by which the young members could raise themselves to the heights of their profession. He quite adopted the views of the President, that they should consider those two subjects in the view he had expressed in his address, and he was sure their own profession and that of the engineers would be great gainers thereby. Another subject mentioned by the

President was that of the Architectural Exhibition held with reference to the Royal Academy. He (Prof. Donaldson) had always regretted that that architectural exhibition had ever been established at all. It had never been successful, supported only by eleemosynary aid to supplement the entrance fee paid by visitors. He was sorry the Academy did not, in the first instance, hold out sufficient inducement and afford proper space for that exhibition, the absence of which had no doubt partly contributed to the failure there of a display worthy the profession. He was also sorry that architects themselves had neglected even the scanty opportunities afforded them by the Royal Academy, and had not sent their works in, so as to have forced the Academy to give a locality worthy of the productions they sent. This was an important matter. The Exhibition of the Royal Academy ought to have vitality in order that the profession might be well represented. It should show them as being artists as well as men of science. It behoved the profession to rouse themselves, that some steps might be taken, that more justice might be done to their art in the exhibition rooms of Trafalgar Square—that the public should hold them more in esteem—that the benefits of the funds, with which the Academy was endowed, should be distributed amongst architecture, painting and sculpture, with a greater consideration to the former than had hitherto been bestowed, and by that means the Academy would entitle itself more to the gratitude of the public. Another topic of great importance touched upon by the President was that of the French International Exhibition of 1867. He hoped the plan that had been proposed of forming a special committee of this Institute would be carried out soon; the duties of which committee would be to receive designs intended for exhibition, to eliminate those which were worthy of our School, and forward them to Paris. On the last occasion there was a similar committee established, consisting of his friend Mr. Gilbert Scott, one or two others, and himself; and he recollected anterior to that a similar process was followed, and they had great gratification in sending a collection of drawings well worthy of the profession. Every drawing could not of course be sent. Some men had high ambition and little talent, and if they were mistaken, it was a great point that the Committee should not be mistaken. It was very important that they should send proper examples of what English architects could do. He hoped this Committee would be established soon, and that our architects would be prepared to enter into that great international contest, which they would have to sustain against the architects of the whole world. He trusted the English Architects would show themselves, as before, worthy of the position they ought to take in the face of the whole universe. The learned Professor concluded by moving a cordial vote of thanks to the President for the able and instructive discourse with which he had favoured them that evening.

Mr. George Godwin, Fellow, begged leave to second the proposition, and would so in a dozen words—half of them being for the expression of his gratification and thanks to the President for his very catholic, eloquent, and useful discourse, for which they must all feel exceedingly obliged,—the other half to express the satisfaction with which he saw public reporters again in that room. As a very old member of the Institute, he must congratulate his brother members on what he considered to be a step back from a mistaken policy towards that policy of publicity to which the Institute owed much of its position, and by means of which it was beginning most effectually to interest the public in the welfare of the art. He had no desire to say more, and he seconded most cordially the vote of thanks to the President.

Professor Kerr, Fellow, begged to add the expression of his gratification at the address with which they had been favoured. What happened most forcibly to strike him individually, was the sound practical value of the hint that the architect and the engineer ought to be more drawn together. It might, perhaps, be a good plan for this Institute to enter into a sort of negociation with the Institution of Civil Engineers, whereby each Society should admit a certain number of the members of the other as

Honorary Members or otherwise. They must bear in mind that architects were at present not eligible as members of the Institution of Civil Engineers, except as Associates; indeed, one of the most distinguished members of the Institute, who was at that moment a member of the Institution of Civil Engineers, was only an Associate; and of course it was not to be expected that members of this Institute generally, of such standing as that gentleman, or even considerably less, would submit themselves for election as Associates. He had, however, risen chiefly to express, on behalf of what might be called one particular class of the meeting, the great satisfaction with which he was sure every one of them had listened to the discourse of the President.

Mr. **John P. Seddon**, Hon. Sec., remarked that he had been much pleased to hear the view taken by the President and by Professor Donaldson, with regard to the desirableness of a closer connection between architects and engineers; and he thought it would be well that there should be a proper understanding as to whether engineers were admissible as members of the Institute of Architects, and if so, in what capacity, as he himself was acquainted with some Civil Engineers whose works would fully entitle them to such distinction.

Mr. **John W. Papworth**, Fellow, said that he had intended to offer on this evening no opinion upon the subjects mentioned in the President's address, but merely to express his appreciation of the logical character of that document. He felt, however, forced to take the immediate opportunity of requesting that there might not be any such precipitate attempt to carry out one of the views propounded by the President, or rather to go beyond it, as was indicated by the remarks made by Mr. Seddon. There seems to be a great inconvenience, to use no stronger term, in the difference between the regulations of the Institute of British Architects and the Institution of Civil Engineers; and until this can be abolished, it is useless to attempt any such fusion of membership in the two bodies as appears to be desired with the best intentions by Mr. Seddon. That gentleman must see there would be great absurdity in asking the Institute to elect, either as a Fellow or an Associate, any naval or military engineer or architect, whose merits, although recognized by everybody, would only place him in the rank of Associate at the Institution of Civil Engineers. There would be similar absurdity in asking that Institute to elect as a Fellow any member of the Institution of Civil Engineers so long as the members of the Institute were not received in the equivalent class of the Institution. Either of these absurdities would be perfectly contrary to the spirit of independence advocated in the address just delivered by the President, whose ideas upon the subject evidently demanded careful consideration, due not more to the position of their author than to their intrinsic importance. Perhaps much unpleasantness would be prevented and all personality hereafter would be obviated by declaring on the present occasion that if there were any proposal for the election into the Institute of any gentleman belonging to the classes mentioned, he (Mr. Papworth) would think it desirable to follow the course which in two previous instances he had taken—namely, to recommend the candidate not to proceed to the ballot.

The question of the vote of thanks to the President having been put to the meeting by Professor **Donaldson**, and carried by acclamation,

The **President** rose and said, I can assure you, gentlemen, that it is a great honor, gratification, and relief to me that this address, which I felt was one touching matters of great importance and delicacy, should have been so well received. It is the result of my own honest thought, helped by no one, written within the solitude of my own room in the country, and sent to press without my having taken the opinion of any one upon it. There, gentlemen, it stands as I have read it to you. The way in which one or two points which I have thrown out, especially with regard to the Royal Academy and the French Exhibition, have been commented on by Professor Donaldson, has much gratified me. The question as to the closer connection between ourselves and the engineers is a very broad one, and it would be unwise for us to commit ourselves at this moment to anything upon it. We must leave it to bombinate in our heads and in those of our engineering friends for some time to come. But as to the more immediate question of the French Exhibition I am glad to state now what I could not do earlier in the meeting—that it has already come before the Council this evening: it was unanimously and cheerfully taken up in the sense in which you have regarded it, and it stands on the agenda for this day fortnight to bring it into a formal state.

IRONWORK: ITS LEGITIMATE USES AND PROPER TREATMENT.

By William White, F.S.A., Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, November 20th, 1865.

It is with some diffidence that I come before you to offer a few remarks upon the legitimate uses, and the proper treatment, of ironwork. My diffidence arises from no consciousness of unformed views upon the matter,—from no sense of doubt as to the position which I shall take,—from no lack of conviction as to the strength of my case,—but only from the knowledge that the subject has been already ably handled here,—that so many of those whom I address must have already formed their own judgment upon it, and in a more mature manner perhaps than myself.

But though with diffidence, and at the risk of informing you of a great deal that you are already well acquainted with, it will be with pleasure that I place before you some of the conclusions at which I have myself arrived; for it is a subject in which I have long taken an active interest, and which does not fail to interest, often in an unexpected degree, a class of men too frequently looked upon as amongst the most mechanical and plodding of their generation, and the least susceptible of art impressions.

I have once before treated of this subject, as it was represented to the English public in the great Industrial Exhibition of 1862. I then endeavoured to criticise, in a cursory sketch of the chief objects displayed, the especial failings and imperfections on the one hand, and the successes, so far as obtained, on the other, commonly attendant upon the treatment of metal work at the present day. It is in consequence of those criticisms that I have been now called upon to set forth, in a more general way, that which then attracted my attention only to a limited set of specimens. I know that many will have made up their own mind as to what is legitimate use, and what is proper treatment. It is too much to expect that every one here will have arrived in each instance at the same conclusion as myself, or would give consent to all that will be advanced. I do not think I would desire even that they should. I know too well the danger of thought running in a single groove, whether it is the thought of an individual, or of a body like this,—whose aim is the one single and persistent endeavour to arrive at the whole truth on the many questions, whether of science or of art, relating to architecture. I have reason to believe that several members of our fraternity are entirely opposed to the view which I take as regards the use and the treatment of ironwork in some respects. But in this, as in other matters, opposition may serve to call forth latent truth, which would continue dormant but for the effort of thought necessary to meet the objections raised. Some such objections I shall rejoice in the opportunity of bringing before you.

No one who has striven to obtain in his own designs a fairly artistic treatment in the manipulation of this material, can have failed to find at times the exceeding difficulty of getting his intentions thoroughly or even correctly understood by the workman. Much less has he been able to get his ideas satisfactorily carried out, without much personal application to the details of the work itself as it comes from beneath the workman's hammer. Perhaps too, at times, he has felt the difficulty of accommodating the treatment of the design itself to the capacities of this metal for representing it, or to the proper and fitting mode of dealing with a material so ductile and yet so stern and resisting and unrelenting in its character.

The first question which suggests itself is as to the fitness of iron for *all* purposes. This by some is made the stand-point for argument upon its merits or capabilities. I maintain that iron ought to be used only for its *proper* purposes. "This is begging the question," say they. "*Proper* purposes are those for which it can fairly compete with brick, or stone, or other ordinary building material. There is no limit to its fitness or capabilities; but architects who have not learned its true artistic treatment for general building purposes will, of course, decry its use rather than proclaim their own incompetence to deal with it. They persist in the use of the old materials, merely because they will follow none but the ancient forms, and are determined to exhibit them still just as they formerly existed, but under entirely different requirements from those which now govern our art. But if it be admitted that if iron may be used for columns and girders, no legitimate reason can be alleged against the wholesale adoption of it in everything where it can be successfully applied. It is only because proper attention has not been given to the material; but the time will come for its universal use in ordinary houses, in walls and windows, roofs and floors, and for every purpose in fact, whether of construction or of ornamentation, in which brick, or stone, or wood hitherto have been, but no longer will be, the generally recognised materials." And we are further told, by way of confirmation, that we are fallen upon degenerate days; that art declined to zero at the end of the last century; that now indeed we have nothing to fall back upon; that in truth the last quivering of the pulse is still; art has utterly failed; its life is fled; "sculpture and painting have ceased to have any marked influence upon mankind." And why? It is, so far as I can understand what is urged, because the age of other materials has passed away, and the age of iron has set in. The remembrance of the past will be, and must be, crushed out of us, if we would rise to higher things than mere antiquated imitations of old types. We must throw ourselves heart and soul into the new state of civilisation, we must work out a new style, and set up our standard in the indomitable stronghold of an iron-architecture. For iron must be as capable of artistic treatment as any other material. It is only ignorance of its adaptability that stands in the way of its universal use.

Such are the ideas of some amongst us who have taken it up as their specialty. I say, however, that this mode of dealing with it really *is* begging the question. Granting, as all must do, its capability of artistic treatment in its proper place, what has this, I would ask, to do with its universal adoption, or its universal fitness for every species of architectural use? So far as I am concerned it may predominate in Utopia, but until we reach that golden shore we must be content to limit our views as to the use of iron for every purpose. So long as it helps us on our road we will take it by the hand; but when it becomes a drag we may fairly leave it to others to bring after us. Iron must be only a servant to architecture, not its lord; and if ever it should usurp the power of a despotic tyrant, woe to the art which will be enslaved by it.

Some, indeed, have taken a very advanced step. They maintain that under the use of iron "purity of outline, with almost total absence of ornament, might gradually be made to pervade everything from our buildings to our tea spoons." Let this be said as regards any fitting material, and it is perfectly true. But it is singular and noteworthy, that as regards iron it is simply and absolutely false. The very compactness and density of its substance in proportion to its strength render it unfitting as a medium for the expression of bulk, and so of proportion, to a very large extent; and its hardness and harshness of texture render it still more unfitting for such articles of household use as would indicate such a refinement of civilisation or such a development of art. This in itself is sufficient to shew the fallacy of the proposition. But more than this; so long as brick, and stone and wood exist, that is to say, so long as the world lasts, these, and these alone, will be the staple material, the true and universal media for the expression of art in forms essentially and strictly architectural. This I say fearlessly is a truth almost too simple to be argued upon, although I shall give, in passing, good reason for my assertion. Do I therefore ignore the use of iron, and say that it is incapable of artistic treatment? By no means. In its degree, and in its proper fashion, it is capable of high artistic treatment as other material is, though not to the same extent. And, as I have just said, for the expression of bulk, upon which the proportion of all true architecture,—irrespectively, I mean, of any particular phase of it,—to so great an extent and so materially depends, it is utterly inefficient. For the highest class of art, again, namely, for the representation of the human form, and for other followings of nature, it can never compete with stone or marble, with silver or gold, or even with bronze. In the higher forms of art the hardest of materials oftentimes are chosen, in spite of their hardness, either for their intrinsic value, or for their capability of manipulation, or for their fitness to exhibit in a durable and striking manner the spirit and the precision of the artist's hand, and the power of his conception. In every one of these respects iron is far behind all the other materials which I have named. I am at a loss to discover, for such purposes, its single redeeming quality. Its final destination I can foresee. In after ages, when the granite or the gold, the marble or the bronze, shall be treasured up, valuable works of art, the material which will the most quickly and the most surely find its way to the furnace happily will be—the old iron. Its very incapability of being cut or tooled into shape, after casting or moulding, and its inevitable oxidization when old, will effectually prevent its being commonly used for any such high purposes. It is in such works as these that, most of all, the skill and the feeling of the workman himself must be impressed upon the otherwise inanimate material. And hence I say it is not a material of the highest class, in its relation to architecture as an art.

In constructional or mechanical branches of architecture, however, iron henceforth exists as a subsidiary which cannot be dispensed with—which we would not dispense with if we could. In extensive works, to be built with vast accommodation and at moderate cost, or within a short limited space of time; in engineering works, and such as are more strictly utilitarian or constructional, rather than architectural, properly so called, iron will hold its just and undisputed sway. And no one will grudge it its high dignity. But let it not intrude itself as an equal into the society of its betters, except in the garb which best befits its station, after long and painful submission to the hammer and anvil of the artist-smith. For it is true in this, as in all art, that it is not in the utilitarianism of a thing that its beauty consists, as some perversely and perseveringly maintain. Utilitarianism may be one element of beauty amongst many, more important ones; for a thing must be fitting for its intended use; it must present no contradiction to the law of fitness. But its beauty lives in a far higher element; for the maximum of beauty, in kind no less than in degree, is found mostly with the minimum of utilitarianism; and even in things utilitarian, it is something superadded to, or growing out of, the utilitarian basis, which imparts that sense of pleasure which beauty gives; and this something is not obtainable, excepting, perhaps, in a low and a limited degree by any mechanical process; and the construction of iron on a large scale is essentially mechanical, as will appear presently.

The main argument for iron, so far as I can make out, is its thorough utilitarianism and its general adaptability to such extensive works as I have referred to. It has, however, been admitted that, at present, it is useless as compared with brick and mortar for walls of warehouses for the stowage of combustible material; and in regard to durability, it has got to stand the test even of a century. It does not promise well for the prospects of iron that no effectual protection has been found for it, of a permanent description; whether for its external surfaces, or for those portions of inner surface which are subject to the friction and wear of bolts and bands. But when these objections, amongst others, have been obviated by future invention, it is difficult to conceive of iron as of a material strictly ARCHITECTURAL in the sense in which brick and stone are so. Its very nature forbids it. If used for common building purposes, the very necessity for its exact reproduction and vast reduplication in large and prevailing forms, its uncompromising resistance to any modification of outline, or of treatment in detail, puts it almost beyond the reach of architectural art. I will not even bring against it the difficulty of consistently ornamenting an iron construction, lest I should be misunderstood or misinterpreted;—seeing that there may be high architectural merit nearly or entirely without ornament, popularly so called. But this I will say: it is not even a question of equal availability with brick and stone for building purposes, but a question of equal availability IN COMBINATION WITH an equal capacity for giving expression to form.

Again; architecture is a fine art. It is not pretended by the advocates for iron that anything but cast or rolled work can be used on a large scale. Forged work would be useless in the main structure. It could be introduced only in the subsidiary ornamental details. Expense alone would forbid it, were it not already excluded by the necessities of the material itself. And the stern multiplying process of machinery never can be applied to art as a fine art. There may be great art as there must be great science called into play in the process, but still it cannot class as a fine art. Its class must ever remain that of a lower order, more nearly analogous with such works, for instance, as those of photography and lithography in connection with pictorial art. There is great room for the exercise of the power of the artist who produces the negative or the block; but the print from either of them is not and cannot be equal to the enduring touch of the artist's own hand upon the panel or the paper. The amount of the individual mind exhibited in the means employed may be of the highest order, but its full power will be over-balanced by the presence of a mechanical result.

For the main constructional portions of domestic or ecclesiastical buildings or of public civic buildings, which are to be monuments of art, there need be no fear of the good sense or the good taste of the country being so changed as to adopt the universal use of iron. And the minimum of bulk already referred to, which iron presents, at once places it beyond the pale for church architecture especially. It may be used with great advantage for temporary churches, until fabrics more substantial in appearance as well as in reality can be raised in their place. Its very facility for removal from its old site, when its use has been superseded by something better, and for reconstruction on a new site where a fresh population has started up too quickly for its wants to be otherwise supplied, will often render it not only available but desirable for such temporary purposes. For places of worship of non-conformist denominations it is not for me as a churchman to dispute its applicability, for I do not know the exact limit or the extent of their requirements. But I know that generally they altogether ignore in their buildings any symbolical connection of things temporal with things spiritual, of outward expression with hidden meaning, and any embodiment in the material fabric of that which alone is true and enduring. And at all events they have no such enduring tradition to perpetuate, as the church maintains, whether of faith or practice, or even of mere outward expression of dogmatic teaching, descending down from generations past to generations yet to come. But it may be that iron not inaptly represents certain modern developments of belief, or modes of modern thought; it may possibly exhibit to perfection the power as well as the popularity of oratory, or the passing, or even more permanent emotions which it calls forth; but it can never display the stability or the repose which is formed beneath the shadow of an old and enduring institution such as the church, with all her vicissitudes and trials, has been and will continue to be.

Iron may exhibit lightness, and a certain amount of elegance, but it never can impress us as representing the more sterling characteristics which bulkier materials from their very nature are capable of picturing to our imagination. Nor do I anticipate the time when the allusions embodied in the fine old hymn "Angulare Fundamentum," still in constant use amongst us, shall become obsolete, or when that composition will be superseded by some effusion which shall bring before us a corner column of resounding metal.

Still I can readily believe that to him who ignores or denies all connection of poetry with architecture and all influence of the one upon the other,—out of whom what little poetry he may once have had has been driven by the dry and practical business of city life, iron might become a staple material. And if we accept the saying of Coleridge, that poetry is antithetical not to prose but to science, we can understand how easily a man may suffer from increasing contact with the every day world; how his ideas may become cramped and his imagination dwarfed; how his perception of the real will embrace only the busy street, or the still more busy office, and at length how sceptical he may become of the existence of anything higher and purer than that which meets his outward eye. But is this an end to be desired by those that aim at raising architecture from the dust to what it once was? If I thought so, art to me would lose its charm. If it were so indeed, many of us would no longer hesitate to embrace the more purely scientific and constructional branch of it, irrespectively of other, and as many deem, higher considerations, even if it involved a more complete carrying out of an iron system.

Before passing on to the second branch of my subject I would observe that this view of the legitimate use of iron opens up the whole field of a discussion, which seems likely to command attention for some time to come,—the relation of architecture to civil engineering, and of architects to civil engineers. In all probability the next few years will bring this question more prominently forward, and if others feel as strongly as myself upon it parties may run high. I have no wish to promote that strife. At the same time I should but do you as well as myself injustice if I did not declare plainly and unequivocally my conviction and the side which I must take. From what I have already said you will not be surprised at my inclination to regard the two branches as more thoroughly distinct than it is now becoming the custom for the advanced school to consider them. But there is one point which I would commend to the especial notice of our late most esteemed and worthy President. He well knows that there is an established term applied to great and enduring works of architecture. They are popularly called, and deservedly so, "Monuments of Art;" monuments wherein Art and its memories continue to live embodied, ages after the spirit which called them into being has passed away. I look forward to the day when another term, not instead of this, but side by side with it, shall have been equally and as substantially recognised, namely, "Monuments of Science." Their birth into the world has been already celebrated; and their names are even now too many to enumerate. You will have anticipated my intention of classing amongst the foremost of "Monuments of Science" of the present age, such works as the Crystal Palace, the sheds of various railway stations, and the bridges or viaducts of Crumlin and Saltash, Menai and Hungerford; and it is advisedly that I mention sheds of stations, and not the station-houses themselves. But are such amongst the monuments of art *quoad* art, and to be classed in the same architectural category with the Palace at Westminster, the Town Hall at Liverpool, or the Manchester Assize Court? If any think so, I must range myself amongst the opposition, I cannot side with them.

Possibly there may be something to say on the other side of the question; and it is very certain that the two arts of engineering and architecture do, to a very great extent, so run together and intertwine that it is difficult, if not impossible, exactly to define their point of contact or of separation. But it is equally certain that the real elements of the two are entirely distinct, the one consisting in the science and art of construction,—the other in the science and art of composition and design, properly so called. To say, however, that the civil engineer ought to, or can, or does so ignore composition and design as to disregard the effect of his work upon the eye when finished would be as gross a calumny upon his branch of work as it would be upon architecture to say that an architect as such, need know, or does know, nothing of the principles or practice of construction; perhaps it would be well if each knew a little more of the other's branch than is sometimes evident at the present day. Nevertheless, I feel sure that I never can bring myself to acknowledge that the two branches ought to be, or can be to any great extent combined in the same person, much less body of persons, excepting in a manner as well as in a degree which shall be highly detrimental to both. In practice they may be occasionally combined, but in theory they are essentially distinct. Here it is that I take my stand. I do not deny the advantages that might be gained by each member of either branch taking a degree, it may be, in the other's specialty, supposing there to be schools of art in each department, as there ought to be, and some day will be. But shall this therefore be the signal for the rise of petty jealousies and party strife between the two? Heaven forbid. Shall it not rather be the ground-work of more close combination and intercourse, whereby each may stir up and instruct the other, so to say, in the special branches in which they may severally be deficient? Let us look at an analogous art. Physic and surgery are said by some to be so interwoven in their natures that each practitioner may well combine, and ought to combine the two. It is true that they are interwoven to such an extent that every one who practices in the one branch, must of necessity know more or less of the other. But what do we find? Not only are the colleges for the two distinct, but the practice of all the most eminent of the day naturally falls into the one especial line for which they have a predilection or talent, and to which they have in consequence directed their studies, although it is true a considerable number professedly practise in both lines. Yet the broad distinction remains, broadly and distinctly defined, and ever will remain, between the surgeon and the physician. The one devotes himself especially to the general construction of the human frame, with its various forces and movements, the other to the general physique of that same frame as bearing more directly upon the circulation, and the assimilation of those substances which maintain life, and upon which health mainly depends. Time forbids me to pursue this comparison, else it would be interesting to observe, as illustrating the same truth, the different ramifications in detail in either instance, to which the especial attention of the individual is devoted, even down to the more minute and inferior parts of our organisation; exactly as in architecture the arts of painting and sculpture, and all the plastique arts, are severally followed by their respective devotees; as also in like manner, in civil engineering, the various branches are separately practised, although all these, in either case, are properly included in the general pursuit of the profession. We cannot now follow this further, but we may rest assured that the whole analogy holds good sufficiently for the purpose of showing that the new theory of a fusion of the two is unnatural and impossible, although a fraternal relation might be established with mutual advantage to both.

Having now vindicated the cause of iron, as well in its legitimate use as from its growing abuse, I must endeavour to sum up the chief of the different modes of treatment, and the several processes, which can or cannot be justified by a strict observance of the distinctive qualities of the material. It is difficult to lay down dogmatic and unerring rules as to what is right or wrong in principle; or always to say whether such rules are infringed or not in a given instance. It may, however, be stated generally, that proper treatment for wrought iron (Figs. 1 to 4) is exemplified in that which best exhibits the power of the workman's hand in the forging of it; and it is in design and fashion such as to preclude the probability, if not the possibility, of its having been cast or impressed,—whether by its delicacy of form, or its vigour of finish. Even in works of massiveness or strength some evidence will appear of the yet more overpowering force which has bent the strong metal to its will, whether it be by hand-drawing or tapering, or by some little playful conceit which the workman indulges in, thus stamping it as his own.

Cast work, on the contrary, must be more soft and superficial in its treatment; it must be such as to bear strict evidence of its impressment; it must appear in forms such as to be capable of, and well fitted for, repetition; such, in fact, as could scarcely be wrought even by great skill or by indefatigable labour; such as to exhibit chiefly surface work; such as to avoid all appearance of

Illustrations of Ironwork.

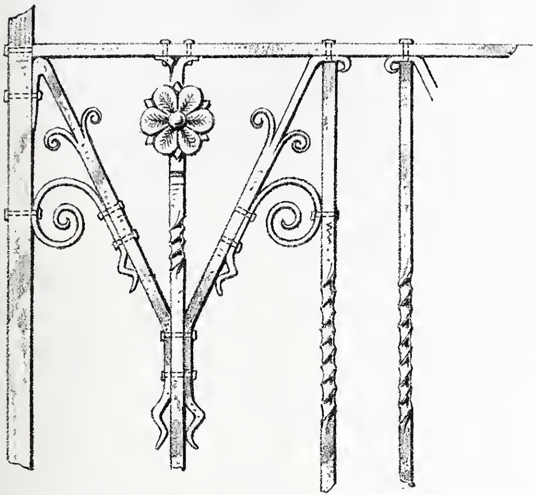


Fig. 1.

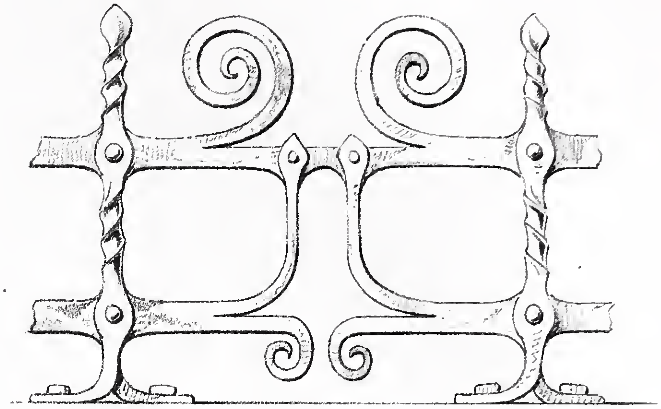


Fig. 2.

Figs. 1 to 4. Wrought Work.

.. 5 & 6 Cast Railing Wrought Standards.

.. 8 Sham Wrought, (being cast).

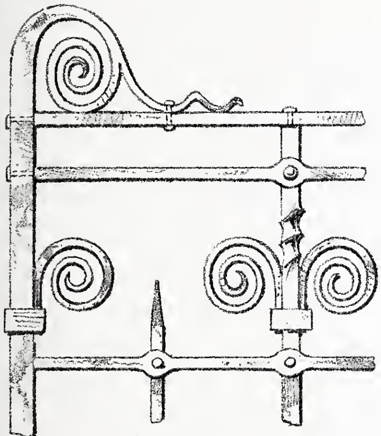


Fig. 3.

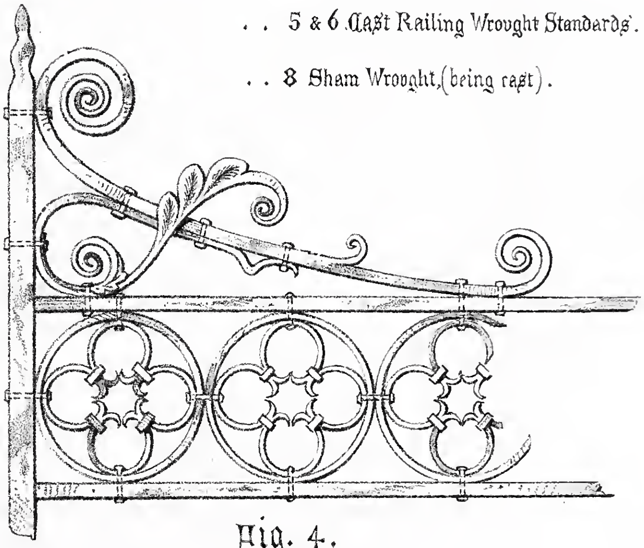


Fig. 4.

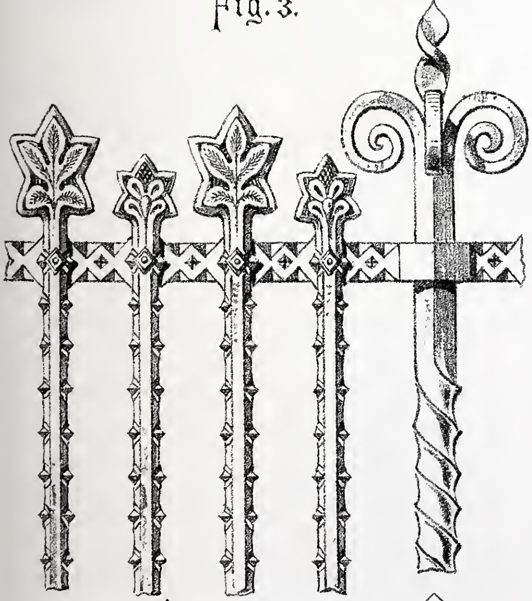
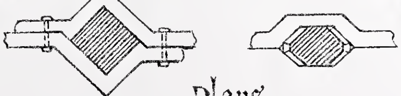


Fig. 5



Plans

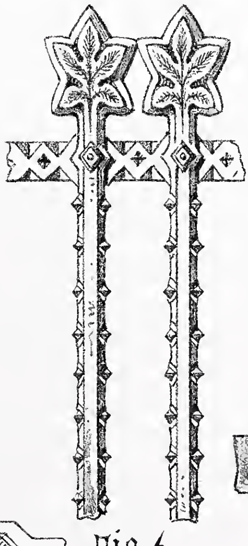


Fig. 6.

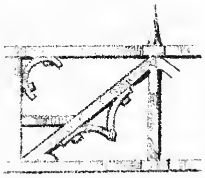


Fig. 8.

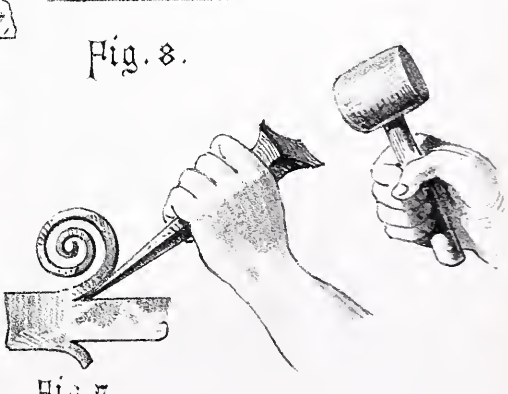


Fig. 7.

William White. F.S.A. Archt.

scroll or curl or tortuous bend, or other little refinements and dexterities which can be displayed to perfection only by the hand of the individual workman. The distinctive difference, indeed, between the true art-treatment of wrought and cast metal is, that the former must display its ductility and vigour; the latter its impressibility and passiveness. It is from the denial or neglect of these qualities that failure commonly commences in either case. But there is a third description of work which ought not to be passed over. It is the treatment of that which is called malleable iron, so called not because it is hammered out, but because after it has been cast or pressed into a die it is capable of receiving without fracture a certain amount of hammer labour. Not that it does receive this, excepting perhaps in minute proportions, and in rare instances; but it is a name which appears in published price lists as a sort of sign-post to misguide an uninitiated and unsuspecting public to the idea that it is not only malleable, but actually worked by the hammer. And if only casting or pressing be used in its production, wherein is it better than common cast or pressed metal? Its superiority consists, say its advocates, in its texture and strength, which are allowed to be nearly equal to those of wrought iron. And I am bound to acknowledge that here, even in iron, is a material capable to some extent of high art treatment, if only it is used for such. But let it not be degraded to the common level of other moulded metal. Let it be designed suitably to impressed work; let it be worked up dexterously and vigorously into something that shall be worthy of its use. Let not the forms be followed of a quasi-forged and drawn-out construction in its manipulation, but let it be cast and worked to the highest pitch of smithy skill; let its treatment tell the true tale of its high artistic development. Then call it malleable iron if you will,—but till then let it not be ashamed of its proper name. The term "annealed cast iron" would much more fitly express its known nature and qualities. But let its treatment justify its superiority, without having recourse to an unworthy subterfuge, almost as base as that of marbling a plaster cast to give it the dignity and the character of a genuine and valuable work of art.

Having now briefly outlined the several kinds of iron, and their respective treatment, the all-important question presents itself as to the means available, both in regard of the use of machinery and of the position and province of the workman employed upon it. In considering this branch of our subject we must bear in mind the truth that in forged work there is genuine art to be displayed. There is room for delicacy of expression, and for the exhibition of the forger's power, which is not possible in a mechanical process, and which, indeed, is the very element distinguishing art from mere mechanism. It is equally true, however, that great skill, together with great knowledge and experience, is required in the fitting of castings, or of machine cut details; and, when well done, skill is evidenced in the absence of imperfection and irregularity rather than in the presence of any element of pleasure to be derived from display of the workman's individuality. Whereas in such forged work as comes properly under this denomination, it is the reverse. It is not the absence of imperfection, or of irregularity, which pleases the eye, but the presence of a living power which has made itself felt upon the otherwise inanimate metal, bending it to its will, and giving evidence of its reality in spite, perhaps, of great imperfections, or of still greater irregularities.

Again, in a proper treatment of forged work, and in order to obtain the desired effect, great regard must be paid not only to the implements used but to the mode of using them. One prevalent failing in such modern work is that it is so intensely tame and shoppy in its finish. The cold chisel, the scissors, the file, are made to supersede the hammer and the tongs. The indiscriminate use of the file, indeed, has given rise to a false taste in metal work very much akin to that of scraping of the stonework of the noble minster fonts of Lincoln and Winchester. Let me, however, not be misunderstood. It is not that I object to the use of the file; but as I have upon another occasion observed, so I would now again take the opportunity of repeating—" the file must be used only as a means to an end, instead of being, as is too commonly the case, the end to which all metal surfaces must be brought before they will pass muster with a misguided public. The file may be, nay, must be used for fitting and jointing, and the perforation of plates and other fine work such as the hammer could not touch; but the use of the file for finished surfaces is one of the first things that has to be abandoned before the forger can assert his rightful claim to our regard. Such treatment of surface is of the highest consideration in all art works, whether in wood, stone, or metal. In soft fabrics it is imparted by texture. In hard wares it is to a great extent given by implement and manipulation. A high polish presents one kind of beauty, and a rippled or broken surface another. A merely crude and neglected surface does not satisfy the eye. Labour of some sort must be bestowed; but only in a proportion to the pretensions of the work in other respects. But carving in stone or wood ought commonly to show the marks of the chisel or tool, and if these are scraped or filed, or sand-papered away, the play of light upon the surface is dissipated, its character is impaired, and its surface measure, so to speak, over which the eye has a pleasure in travelling, is actually diminished in effect. So, too, forged work ought to show the hammer marks, and wherefore should the roughness of the fire marks be filed down, when, by cold hammering, its surface can be greatly hardened and its tone deepened, its play of light increased, and a polish of a totally different but far superior sort imparted,—a polish not of mechanical labour, but of handiwork? And wherefore destroy the evidences of hard and well earned labour for what might be effected by the merest apprentice or a human machine?"

But, say the great wholesale iron-workers, in order to carry out this view of art in iron-work, you would have all the workmen to be artists, whereas under our present system we find one artist sufficient to afford employment for a large number of ordinary workmen. I would have no such thing. I only say, do not bestow the term "high art" upon work produced by machinery, and fitted by a mechanist. In order to have high art as distinct from mechanism the hand of the individual must so far predominate as to throw into insignificance the mechanical process by which any of the subsidiary forms may have been produced. This evidence of the hand of the forger in the execution of his work being needful, as the hand of the sculptor is in his, opens up a large field of enquiry with which we are at the present moment scarcely concerned, further than to call attention once more to the importance, which our present President has so often and so ably urged in other places, of promoting, by all the means which we can command, the education and the recognition of a class which has till within these few years almost entirely disappeared from the community—the class of artist workmen.

The mechanic, as commonly he is in nature, no less than in name, has, in taking the place, altogether usurped the province, of the artist-workman. There is room for both; there is need of both; but at present we are reduced almost to the one. The question to be considered is the relative position and the distinctive employment of the two distinct classes.

I have found, in the great iron districts of the North, a mistaken idea prevails that there is no real difference, and ought to be none, between hand-work and machinery as regards effect when finished. It is a mere mercantile calculation as to whether machinery or hand labour shall be employed in the execution of a given work, and as to how far it will pay to produce fresh machinery, dies, or gauges to reduce the work to its requisite state for finishing and fitting, leaving as little as possible for hand labour in the completion of it. And the amount of art displayed is measured, so to say, by the ingenuity of the machinery, and by the success which the article has in pleasing the public and effecting a sale. It is considered unworthy of the age to put to hand-labour that which machinery is capable of executing,—and this as a matter not merely of economy, but of art. Articles so produced are classed with the fine arts as nearly on a par with stained glass and sculpture; and certainly with forged iron. And no doubt there is great art in the invention of the requisite machinery for the facture of such iron-work,—machinery which performs all sorts of operations,—cutting, piercing, rolling, stamping, and pressing,—machinery of such power, and adjusted withal to such accuracy, as to crack a nut, and yet not crush the kernel, with a force of twenty tons. And it is not without some show of reason that the impression arises of the day of hand-labour being past beyond recall. Am I therefore finding fault with this state of things? By no means. On the one hand I know the day of hand-labour is not past; and on the other I am too thoroughly convinced of the truth of the dicta of the political economist not to see that a vast population must have vast supplies at a reasonable cost; that machinery is an untold blessing to poor as well as to rich; although the change must bear heavily at first upon those whom, for the time, it deprives of labour.

There are people, however, even now who deprecate the use of machinery, not for its injury to art, though partly on this account, so much as for its drudgery, and for its degrading influence upon the men who have to spend their lives in working it. It is, say they, the weary round of one unchanging operation which tends to limit the mechanist's mental growth and to make him the creature of one idea. Now it is from the best authority that I speak when I affirm that the case is really quite the contrary. There is no drudgery so great, no degradation so low, as in those branches of manufacture requiring large reproductions of one form, or vast repetition of one process, to which as yet machinery has not been extended. In physical health, in moral condition, in general intelligence, the whole of the community is in a lower position. Machinery is not only a necessity of the age we live in, but also one of its greatest blessings. The converting of a man into a human machine, which has been tauntingly attributed to machinery, is more truly and more universally attributable to the lack of it. Then, says another, if machinery is such a civilising invention, how in the world can you justify your assertion that the day of hand labour is not past, or how depreciate the value of machinery to your working smith? Simply, I say, because HE is an artist. His true work lies not in a pattern to be reproduced a thousand times, but rather in the impression of his own individuality on every single form that he takes in hand. Here is the touchstone of the working artist. The magnet never wavers from this point, from whatever direction it is applied.

And in so far as we are content with the lowlier forms of beauty, let us use machinery by all means. But if we would aspire to the loftier, we must have the force of arm and the power of mind necessary for their production. It is very easy for others again to say, then let us adopt simpler forms and do without machinery; but neither will this do; as I have just said, we want wares for the million: and, in manufacturing for the million, we do not want the highest class of art, or a cheap and nasty reproduction of, or substitute for, that which ought to be costly, and must be so if it is to have the effect first designed for it. We do not want the poorest description of that which aspires to be of the highest order; but rather we want the best of its kind in everything, even in that which is of the lowest order of manufacture. For example; if iron or pewter spoons are wanted for our cottages, or for our kitchens, we do not require them to aim at the more ornate patterns employed in spoons of silver, or of gold, even supposing the pattern to be, by the aid of machinery, as easily manufactured as the other. We would have them to appear useful rather than ornamental, to avoid ugliness rather than to ape art. Otherwise true taste will be offended instead of gratified, and a love of finery instead of refinement will be the inevitable result. Simplicity is wedded for ever to utility; that which is less necessary may reasonably be more ornamental. The less necessary member, indeed, is the proper receptacle for ornament. We want a handle for holding. It must not bristle with ornament so as to cut our fingers. But let the plate which merely covers the joining of the handle be as ornamental as you please, and the severest critic cannot complain.

But with regard to the process to be employed, it is urged, again and again, that surely it must be not only legitimate but right on every account to use the most available means at our disposal to obtain the result required; that if we require work of a certain form, no matter to us whether the material is cast or wrought, cut or stamped, or whether it is laboriously beaten out by the sweat of the brow; and that it is hard if a man may not execute a given work in his own way, and derive all the benefit he deserves from his intelligence in executing it. The fallacy lurking beneath this specious argument is two-fold; and withal there is in what is urged enough appearance of truth to mislead, if unopposed and unexplained. One part of the fallacy lies in the implied supposition that the design itself is, or can be, such as to admit of treatment equally successful, equally good, whether executed in cast, in rolled, or in wrought metal. As matter of fact or of use, it may be no matter to us personally,—in so far as another man's actions may be beyond our control or our regard; but in the interests of art it does matter to us if its simplest dictates are to be set aside for the untruth which this involves. The other part of the fallacy consists in the idea that, even with the best intentions and endeavours, as good a result really can be obtained in any art-work whether the right or the wrong method be pursued. This, unhappily, is a fallacy which has a great hold on the popular mind. It is, however, so manifest as to be scarcely worth refuting. And we may take it as a maxim that—in spite of what we are told as to the relative prices of such wares in the modern illustrated catalogues—it is next to impossible, if not quite so, for any design having pretensions to art as well as to construction to be fairly capable of a rendering in that manner by an alternative process, or in an alternative manner. But I may add one illustration, amongst many that might be brought forward, of a similar principle in another branch of art. One can readily understand the fabrication of woven tapestry of various different materials, whether of silk, worsted, or cotton, to the same design, at relative prices. But what would or could be said of the value of a hanging or an altar cloth with a graduated price according to whether it has been executed in a loom, or by a sewing machine, or by hand? It would be absurd. If the design is such as to be readily and effectively executed by machinery, and is capable of reproduction, and would bear it, why should we go to the needless labour of plying the needle for every stitch that covers the fabric? But if it be such as to display delicacy and particularity of manipulation, surely it would be equal folly to go the cost of machinery, which would deprive the work of its character, and actually make it more costly than if every stitch were worked by hand; even then to fail of the especial effect aimed at. Yet woven materials have their value. But that value is not, and never can be, compared with that of embroidery as upon the same level. A gorgeous woven pattern may be vastly superior in workmanship, as in material, to a bad piece of embroidery of poor material. But, *cæteris paribus*, there can be no comparison between woven work and true embroidery. The one can be produced at so much a yard; the other must be wrought by capable hands in such a manner as to inspire us with a sense of the loving care which has been employed upon it.

We must now pass on to a few details of the processes which may or may not be truthfully and properly employed in the execution of ironwork. It would be undignified and uncourteous, as it would be superfluous, to say anything here as to the general merits or rather demerits of shams, or of their degrading influence upon high art, before a body of men who more than any other in the world have already and for ever repudiated them. But it is needful for me to call attention to the insidious way in which shams do creep into the manipulation of modern metal work; and in order to make my position clear let me give an instance, not as instructing you, but only as illustrating my meaning. All are acquainted with the universal mode of twisting a square bar of iron. This process is said to increase its stiffness or rigidity, but at the same time it enriches its surface. It is essentially a process of the forge. Not only is a certain degree of heat for the operation requisite, but a firm hand and a ready eye in the operator—else the twist will be anything but ornamental. And what do we find? This twist, so telling in its proper place, and in a sparing degree, is actually reproduced in cast iron by the foot, one may almost say by the mile; and this even by some who aim at leading in the van of high metallic art. I say the sooner they go to the rear the better, the better for themselves and the better for us, and the better for art. One mode of forming a twist by machinery there certainly is, which may be legitimate for work merely decorative, not constructive or quasi-constructive. This mode is properly applicable to brass only, and not to iron. It is the forcing of a tube through a spiral die, which produces the twist clean, sharp and regular. But when these tubes are used as apparent supports to arches or to entablatures, it may fairly be questioned how far they represent legitimate treatment, even though they form but the casing to cast iron columns which do the real work for them. Again, I do not see how a constructive arch of iron, whether wrought or cast, can be called defensible as an architectural feature. An arch, as such, implies a constructive process, such as of brick or stone in its erection. Or once again; what can be more absurd than the reproduction in cast iron of the distinctive features of caps and bases, cornices and plinths, moulded and cut after the fashion universally suggested by the necessities of a stone construction. Yet I have been gravely told that such narrow views as mine would set aside one great principle of mediæval metallurgy, namely, its comprehensiveness, which found employment for every description of manipulative detail, such detail often following in its ornamental features the constructive forms suggested by other materials. In no way does my objection militate against this principle. For suppose the artist to invent or to select from some such other extraneous source the form best suited to his purpose, the smith will not reproduce it as stone, or as brick, or as other material, but will produce only some general idea of the form, rather than a leading and constructive characteristic of that which he followed; much less will he aim at a direct imitation or reproduction of it, and no matter from whence a form comes, so that that form is good and suited to its purpose. The cast column, even, might be used and then covered with plates of finer material, so that these be not made as independent cases or cloaks to give an air of construction to that which is only decorative, and yet withal very legitimately is decorative. Nothing, however, can approach to the deliberate perpetration of a cast iron cresting, such as that of which I give an illustration. In this we have not only pretentious cusps and braces of a wrought construction, but even the apparent rivets with which it is pretended they are fastened together. I would not add a word upon the unpardonable parodies uttered in the shape of would-be hinge bands; but that every time a protest or a warning is uttered it may chance to fall upon some ear which it has not yet reached and which may yet profit by it. And unhappily this is a delusion still practised upon those who know no better, through the catalogues of manufacturers of such wares,—the delusion that a cast iron hinge-band adds one whit to the architectural effect of a door, and does not rather destroy all that might otherwise be good about it. The "small cost" is used to justify an expenditure which would be much better saved altogether. The small cost would be much better expended on sending them again to the furnace; for such work becomes a species of trickery which is quite alien to the true spirit of art.

The great aim of art is not directly to imitate but to image. Not to deceive the eye of an intelligent being, but to present or re-present to his imagination an idea which is worth reproducing or perpetuating. If the means used are opposed to or inadequate to the end, the imagination takes offence at the deserved failure. And if such poor artifices are used, the taste becomes depraved; and I believe it to be quite possible for the artist to get into a way of living upon fallacies, as the opium eater upon his drug, till his art-life becomes a morbid state of existence, rather than an existence of energetic enjoyment of its realities. These amongst many prevailing instances of a state of sham pervade our modern iron work, and hinder its rising so rapidly as it might to the position in art which it ought to occupy. And, although, as I said, I do not find fault with the state of things as regards machinery and its necessary application to all useful purposes of daily life, yet I do object most seriously, most strongly, to the system so largely adopted of imitating forged work on a large scale by the bending, gauging, cutting, screwing together by hands which move as mechanically as machinery does, work which is disappointing and insulting, from its tame and lifeless character, whilst it promises and professes at first sight to lay claim to our respect as a genuine work of art.

And such, alas, is the practice of all or nearly all of the monopolists of so called mediæval metal work. The intelligent working artist takes in hand a corona or a grille, which shall impress people with the idea that it is forged by the hand of the expert smith. The work is completed. The popular voice, expressed with all sincerity, "how pretty, how neat, how exquisitely finished," prepares us for the evidence of its having been mechanically cut, bit by bit, from plate or bar, as the case may be, pressed into form by stamp or die, folded, bent, crumpled, filed up and fitted, and finally put together with nuts and screws, by a process of mental machine work, such as might do credit to the professed manufacturer of cast and machine-made wares. But the living working artist, where is he? He is degraded from his post of honour. He is become again a mere mechanist, just when he began to flatter himself that he was rising to the rank of artist in his profession. Let us leave him there,—for he can scarcely come forth again to higher aspirations. Let us draw the curtain over this sad, this humiliating picture.

The mode of manipulation in old work even till the early part of the present century was very different. Look at the wrought gates of our country mansions, or even at the ironwork which still graces many a house not yet a century old in London. Look again at the fine mediæval hinge bands as an illustration of proper treatment adapted to the several parts. The ornamental bands were forged and finely wrought, and bent to proper shape, but the terminations sometimes were stamped and cut with tool and die made for the purpose. Both of these processes required equally the hand of the skilled workman to use them. The terminals sometimes were apparently first cast in a mould, and then worked up and fastened on in their respective positions; and they consisted only of such surface treatment as could be stamped. In none of their stamped work did they ever aim at tortuous bends, or other forms, such as properly could be carried out by forging alone. But there are some who, at the present day, would not scruple to reverse the process, to forge the terminations and to cast the scrolls, if we may judge of them by what they do and say in other ways.

One mode of manipulating an ornament in early work was by the cutting of the cold iron with a hardened tool and hammer (Fig. 7), in such a manner as to cause the portion cut to curl up and form a scroll. We all know not only the old picture illustrating this process, but also specimens of hinges ornamented evidently by it. It gives a sharpness and crispness of finish to the metal which could not be got by other means, and which is well worthy of our following. But regard must be paid to the quality of iron required for this process, as in fact for all good work. Much of the iron is very inferior for such purposes at the present day. Modern improvements in smelting have increased the hardness of the metal and expedited its manufacture at the expense of toughness and ductibility; and such iron is all but useless for the forging of fine work. It breaks away under the process of hammering or of bending, in the forging of it.

One of the most common forms in which cast iron comes before the multitude is in that of the straight bar enclosing the area of every ordinary dwelling house in this metropolis and other large towns; and the question naturally arises how far that form is justifiable. In answering this we must bear in mind that expense cannot be entirely set aside, however much we may desire it; and that the difference between wrought and cast for the purpose referred to would be perhaps some three hundred per cent. in favour of cast. Are we then reduced to the dire alternative either of doing a great wrong to art, by abandoning our principles, or of incurring an unjustifiable expense. I think not. Only if this cast iron pretends to be wrought, it is an egregious sham; for instance, if it presents the spicous point or the leafy scroll which ought to be turned out, and properly can be turned out, from the forge, and the forge alone. What would be said by a brave warrior of old, could he now see, bristling on all sides of him, the common but contemptible device of a cast iron spear with a cast iron tassel drooping from its head, set side by side by the neck to line the footway; with mimic urns, it may be for the standard ends? We may well hope, however, that the day for this is past. One mode of obviating this objection to the upright bar is to have, instead of the bar at all, some impressed pattern of genuine cast iron design, which in itself will be more artistic and more ornamental. We must, however, remember that the main, I may almost say the sole reason, why a long straight bar instead of an ornamental pattern to a London area is, in many cases, indispensable is as a mere matter of security. Anything which would afford easy foothold, as all or nearly all cast perforated patterns must do, would afford facilities for the ingress and egress of those whom area railings are chiefly designed to keep effectually out. But this seems no reason why the upright bar should be of the common round or square section of wrought form, rather than of a flattened, patterned, design (Figs. 5 and 6); nor why the top of the bar should not be cast in some such form as to show evidence of its impressment, instead of imitating that of a kindred branch of trade. We must, in such cases, meet the case fairly and upon its merits, and we shall find that so far from our art suffering degradation by making use of available means, it will be in reality exalted and ennobled; for then we shall have to contend with those only who are afraid, or ashamed, of the truth.

In conclusion I must be permitted to say that I fear I may have spoken more strongly on several points than some may approve; but not more strongly than I have felt. And, having had my say, I am equally ready to listen patiently to all that can be said, if there is anything to be said, on the other side. There is, perhaps, room for much discussion and for much difference of opinion. All present know the difficulty of coming to an agreement on theories of art chiefly, on account of art definitions. In my remarks this evening I have aimed at two things; the first, to make myself clearly understood; the second, to avoid fighting an imaginary foe. If the latter appears to you to have been my fault, I shall set down my failure as due to my failure in the former, and I hope that any disagreement on your part, from my conclusions, may be traced only to that common source of discord,—the difficulty of fully realising the aspects of art, no less than of events, from another's point of view.

MR. JOHN W. PAPWORTH, Fellow, would make one or two remarks upon the paper which they had just heard read with very great interest. He would not go into the great question therein treated, viz. the fusion of the two forms of art and science as presented in the professions of architecture and engineering; because his opinions on the subject had been so recently expressed in the room: but he would refer to one or two of the technical points more especially touched in the latter part of the address just delivered. On one point it seemed that the author of the paper had forgotten a great portion of the principle therein propounded; and something might be said to show that the practice of architects, for a very long period, had not been so absurd as to require the corrections, with which it was threatened, regarding the usual railing to an area in a street. The common railing, made of bars or rods confined at bottom in the curb, and at top by a flat rod, is really faulty only at the bottom: and, when the rods are round, this form of defence is the simplest, and therefore the cheapest, as well as the best, that can be devised for the special purpose; no person has a right to erect as a protection to his property anything which will cause unnecessary damage to any person coming honestly in contact with it; and the area railing of London is quite dangerous enough without being treated in such a manner as represented in the illustration exhibited by Mr. White. There each upright bar has the edges of its face engrailed or brought to faint cusps about five inches apart; and it would be more easy to fancy what Mr. White would think, than what he would say, if he were to slip and strike his own temple on one of these engrails. Mr. Papworth preferred the usual top rail to that shown in the same drawing. When a piece of half-inch cast iron, three inches wide, is employed for such a purpose in lengths that are not braced, the rail is properly laid on its bed as usual, and not on its edge as proposed by Mr. White; the reason of course being that the flat rail has much more power than the upright rail, to resist pressure from the street. Mr. Papworth confessed to having in early life attempted to depart from the usual system of such defences, but had found that spikes, especially the cusps of foliation, were intolerable in thoroughfares; in short, nothing in a railing that would catch a lady's dress was creditable to its designer.

Mr. Papworth thought that the spear-heads and tassels of the nineteenth century, although condemned by Mr. White, were quite as legitimate ornaments as the serpent's heads and halberts of the fourteenth century for a railing. Another subject which Mr. Papworth would touch, because the number of students at present in the room seemed to justify him in asking attention to it, consisted of the manner of rivetting adopted, almost exclusively, in the illustrations exhibited by Mr. White; instead of the bands or clips fastened either hot or cold (too often cold) which were formerly used, although not perhaps a very legitimate way of composing ironwork, and it seemed as if that gentleman had determined to ignore the principles which governed the smiths of the middle ages in the manufacture of their wrought ironwork, so far as regarded the junctions of various pieces. In the drawings shown by Mr. White there seemed to be many places where the rivets would have to be pinched into their place rather than have the heads properly formed by direct blows. Furthermore Mr. Papworth would call the attention of the meeting to a difference which existed in works of the early mediæval period and the present day from that of the best period of ironwork. In such best period the rivets were superseded by clips or bands, and the meeting would acknowledge in the several comparative sketches he now made on the board, the poverty and the richness in appearance of the two modes; in the same period, if a tendril joined a stem, its additional thickness was taken into account, and was even continued from the clip to the base of the stem; that was a law of nature observed by some of the smiths of the thirteenth century; but, as shown in the comparative sketches which he now made, was neglected in the twelfth and fourteenth centuries as much as in the present day.

Mr. Edwin Nash, Fellow, said that when he saw the announcement of this paper he wondered whether Mr. White was about to appear as a champion for the general application of iron to building purposes, but having great confidence in that gentleman's good sense he could not believe that it would be so, and he was sure it must have been observed that the paper just read was full of good sense from beginning to end. It was a great pleasure to him to have heard it, as it contained many high principles, much suggestive matter, and a good deal of didactic teaching very useful to all. He expected that a larger reference would have been made to good and bad works that have been executed, but time would not suffice; yet a good many instances might have been given as means of comparison which would have told greatly on the subject. He felt, however, that they were not going backward, but were going forward in the matter of ironwork, as was evidenced by the many excellent works that have been produced, and when we think of the rich screens of Lichfield and Hereford we need not fear. The malleable cast iron to which Mr. White had alluded he considered to be an objectionable material, and the hinge fronts, as they are called, which are so largely made of it, was an evidence of this by the great facility thus given for an absurd application of them to doors, on which they are no part of the hinge at all.

Mr. John P. Seddon, Hon. Sec., remarked that the exposition in Mr. White's paper of the general principles which should govern the treatment of ironwork had been most admirable and exhaustive. The great difficulty which architects felt now-a-days was, however, to get their designs thoroughly carried out in point of detail,—in fact, to find that myth of which Mr. White had spoken—an artist workman! The truth was that such a creature at present did not exist, and how to get one seemed to be an insuperable difficulty, unless it were, perhaps, in the class of carvers. Carvers were a class of men who had been so trained as to be able to think a little for themselves; yet the difficulty of getting anything respectable in that branch was immense, and in metal work there was very little indeed that was decent. In the works of Mr. Skidmore, referred to by Mr. Nash, there was, doubtless, great excellence, but that was mainly owing to the fact that Mr. Skidmore was himself an artist, and had devoted much study and personal superintendence to the work, but that gentleman had recently stated to him that he had completely failed in obtaining or educating a single artist workman. It was not sufficient to supply good designs; in order to obtain a satisfactory result there should be such a treatment of the work as to show that the hand which wielded the hammer had some feeling in it. The truth was that all modern ironwork was exceedingly slovenly done, the object being to get the largest amount of effect with the smallest amount of means. The most elaborate designs of architects in metal work were thus foiled in every point in the execution. That which in their design they had intended to be hammered was turned out in some other way. He, Mr. S. had lately experienced in the matter of carving the annoyance of not being able to get a single leaf thoroughly worked out—properly drawn so to speak, instead of doing this which seemed so simple, the sole object aimed at was to get the appearance of something like a leaf at a distance. The workmen would not take the trouble to make one good thing, in their hurry to produce a quantity of indifferent ones; and when in despair of either getting them to carry out well either his designs or their own, he had resorted to clear and simple old examples, to endeavour to get them to copy them as an experiment, yet even in their copies of these scarcely a line was truly drawn; still he thought that good must eventually result from such a training, and that it would be well if architects would turn their attention more to these matters, and insist upon accuracy in points of detail, and if they only succeeded so far as to lead to their getting a few leaves properly hammered out, it would be a considerable step towards correcting the present state of things.

Mr. J. W. Papworth had intended to have confined himself to the pleasure of proposing a vote of thanks to Mr. White for his paper; but the remarks just made by Mr. Seddon encouraged him to say a word or two more. First of all he should be glad to hear what Mr. White considered to be the best mode of preserving iron, both inside and outside of buildings; a great deal of trouble had been taken by members of the Institute with regard to stone, and he should be glad to have some information in the case of ironwork. A further object in rising again was to congratulate himself and the members generally on what Mr. Seddon had stated. For his (Mr. Papworth's) part he repudiated the idea of the art-workman as he was now pictured to us, and did not wish to hear much of him, even under better appearances. Mr. Papworth prided himself upon being able to make such a drawing as would show precisely what he intended or required, and he did not want the thoughts of the art-workman to be put in the place of his own. He did not wish the art-workman to say that the work would look better if made of a different pattern, or if worked in a different style, or if finished in a different way. He had suffered very much from such attempted *improvements* in a great deal of work: some at the height of sixty feet had to be re-worked, because it had been spoilt by the way in which the carver insisted upon finishing, for the carver was an art-workman who must think for himself, or must be allowed to consider himself ill-used; in such cases a more mechanical hand would be best. In the interest of the art-workman himself Mr. Papworth did not want to have to deal with a class of workmen who were required to find art upon the wages of labourers. He required either the assistance of an artist, properly remunerated as his colleague, who would not be ashamed to suppose that the views of the designer of the work must predominate; or else the service of a workman who would understand drawings so clear as those that Mr. Papworth took care to furnish, and would execute, as faithfully as he could, the details entrusted to him, without grumbling at his work being altered by the architect's own hand to put those touches which the architect required, and perhaps could not express even in words. The way in which a large class of workmanship had been destroyed within the last quarter of the century, through the idea of art-workmanship, was perfectly frightful; and if he were to be in practice twenty-five years hence he did not know at what cost he should have to put bad work in the price book. It was beginning to be acknowledged by builders themselves that scarcely a dozen firms in London equalled the best work of fifteen or twenty years ago. This arose, as he believed, to a great extent, because some practitioners required everything to be done out of hand; and consequently as their work had not the advantage of preparation and study, they were obliged to say that anything would do, if it were only done somehow. In some measure this resulted also from the existence of a number of so-called architects who were in the habit of making pretty little sketches, but who, not possessing the power of enlarging them, nor of correcting the models in the clay, became the slaves of art-workmen who were in the habit of carrying them out. He begged to propose a vote of thanks to Mr. White for his paper, which he believed would do good; and which he had no doubt would be better appreciated when read at home with opportunity to reflect upon it, than at the moment of delivery from the reading desk.

Mr. SEDDON took the opportunity of seconding the vote of thanks in order to say a few words in reply to Mr. Papworth, though he was afraid they would never agree. He (Mr. Seddon) *did* want a man who could think for himself. They were talking about art-work, and though he would give place to no one in taking pains to furnish designs, with detail drawings or models sufficient to secure the proper execution of such designs, yet he found that if life were wanted in the work, it was necessary not to trammel the workman too much, but rather to lead him into one's own train of thought, than to think entirely for him. A short time since he had been riveted by the quaint fancy shown in an ancient iron handle to a church door, which the workman, by two or three strokes, which no drawing could have taught, had made into a dog's head in the most spirited manner. Now he (Mr. Seddon) did want to see workmen, while following the type of work given them to do, yet able to grasp the idea, to model it thoroughly, and to give it a character and life of their own, which, depend upon it, was the only life possible to be infused.

Mr. WHITE, Fellow, in reply upon the foregoing discussion, wished to say that he took up this subject chiefly as bearing upon the principles, without professing to go more minutely into the details of the question than was necessary for illustration, otherwise he should have occupied two hours of their time instead of one. He felt sure that if Mr. Papworth had understood the plan and section, and construction of the cast railing which was given as an illustration, he would not have made those objections to it; but his observations were more true as to the construction of the mediæval scroll work, although even here he evidently had not looked closely enough into the drawing to see that the band he referred to was divided in plan, and not in elevation; and therefore his remark did not apply. But Mr. Papworth had denounced the art-workman, and deprecated all attempt to revive him, on the ground that by thinking for himself and exercising his own judgment, he carried out his own ideas instead of Mr. Papworth's. He (Mr. White) contended that was not because the artist-workman thought for himself, but because he had not been taught *how* to think rightly for himself, or in any way to throw himself into the thoughts of the architect who might direct him. He was afraid his friend was rather looking to arrive at the golden shore, of which mention was made in the paper, without undergoing the toil needful for its attainment. It was not that we did not want the artist-workman. True he did not want a man who would think in his own way, regardless of the thoughts of him by whom he was employed; but he wanted a man to learn and take in *his* way of thinking instead of his own. It was not from the little sketch that he put into his hands that he wanted him to work; that system, of which there was a great deal too much, only unfitted the workman for proper learning; but it was the large and full-sized detail that he wished him to reproduce: not in the "shears and file and cold chisel" manner he had spoken of, not by the mere cutting out of bands from the bar, or of leaves from the plate, however accurately he might therein follow the outline. Mr. Papworth wanted an exact following of his drawing, neither more nor less; he (Mr. White) knew that manner and finish were things that could not be shown by drawing, and hence the need of thought and knowledge in the artist-workman. It was at the present day considered one of the greatest feats of smith's work, to acquire the power of "drawing" quickly and accurately a bar—say from an inch each way to a quarter of an inch each way, by the hammer and hand alone. A man who could do that, would be able to do nearly all they required.

The CHAIRMAN, Mr. I'ANSON, Fellow, remarked that he would not say more on the subject which had been brought before them this evening, than to express his conviction that both wrought and cast iron were proper vehicles for art and architecture.

The vote of thanks to Mr. White having been carried unanimously, the meeting adjourned.

150. Hampstead Road.
London. N.W. Jan^y 15 - 1866

Gent^n.

Will you be kind enough to return me the 16 wood blocks which I lent you for my paper on Art foliage read at the R. I. B. A.

Yours truly

James K. Colling

Mess^rs. Davy & Sons

I have rec^d. the 12 copies of paper for which I am oblig

ART FOLIAGE.

By James K. Colling, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, 4th December, 1865.

All foliated ornamentation of whatever period or nation; whether it be of carved stone, marble, or wood; or whether it be of paint, inlay, or of any other form of decoration, can all be clearly traced as having been originally taken from natural foliage. Nature from the earliest times has been the great store-house from which those beautiful forms of conventional art, which have been handed down to us, have been drawn. But it has been rendered at different times and by various people in a very different manner. Thus we have the severe simplicity of the Egyptian, the more natural manner of the Assyrian, the beautifully conventional treatment of the Greek, and the full and overloaded foliage of the Roman. From these sprung the later developments of the Byzantine and Romanesque, out of which, again, arose the Gothic. The early Mediæval styles were essentially foliated in their character, as in the early French, and in England, perhaps, no architectural foliage has ever excelled that of the early English period; for purity of line, boldness of treatment, and fine effects of light and shade, it stands pre-eminent. It is, however very conventional, and in the present day there is great danger in foliage becoming too highly conventionalized—it gets reduced to certain set forms, and similarity in the manner of treatment. Nature becomes at length to be dispensed with, and then the artist falls into repetition. The early English foliage is very beautiful, but too conventional for the purposes of modern art; it is engrafted with and forms a portion of the architecture of the thirteenth century; we can, therefore, only use it in the nineteenth as a resuscitation or a revival, but it can never form a part of the architecture of the present age. The artists of the latter part of the thirteenth or the beginning of the fourteenth century appear to have seen the danger of their ornamentation becoming too conventional, and resolutely went forth again to seek the aid of nature. During the short period which followed, therefore, and which has been called the Early Decorated, foliage was taken more directly from nature; but it was scarcely developed before it became overloaded with light and shade, and elaborate undulations on the surface of the leaves.

It is necessary to be extremely careful lest ornamentation should become too conventional, for it leads to the same form being too often repeated, and let it be ever so beautiful, it at length descends to mannerism, and nature becomes entirely lost sight of. This is seen in the foliage of the Perpendicular period. Much of it is very beautiful, but the mannerism of the time is seen everywhere, producing monotony and sameness. The hand of the workman, by constant reproduction of the same form, becomes machine-like, and there are no fresh and distinctive features in his work, which associate it with the variety and ever-varying forms of the original types in nature. Foliage may either be too conventional or too natural—the happy medium is the most preferable. That which is wrought in this, the nineteenth century, should be imbued with nature, and not be a copy of any particular style or period; for, if it be a reproduction of that which is past, let it be ever so successfully copied, it is but speaking to the present generation in a dead language.

In the treatment of foliage, for the purpose of art, it must, more or less, always be made geometrical, and arranged with symmetry in accordance with its situation and purpose. One of the first things to be studied is the arrangement of the branches which constitute the leading lines. These form the skeleton upon which the whole is formed, and they should be made such as will best harmonize or contrast with the architectural or other lines which surround the composition. In the second place, the forms of the leaves and flowers have to be considered, and to be altered or adapted from nature as circumstances may require. In the third place, and one of the most important points, requiring great study and consideration, is the effective arrangement of the light and shade. Then there is the position it is intended to occupy, whether internally or externally; whether it has to be placed close to the eye, or at a height; and, lastly, the material in which the ornament has to be executed.

There cannot be a doubt as to the existence of the "beautiful" in nature, for all our ideas and notions of beauty in the abstract must be founded upon nature; but, although everything is beautiful in some way or other, yet we draw an immense distinction between the different kinds of beauty. One object is beautiful for one thing, and another for another. Other objects, again, we denominate "very ugly," but it is only so by comparison. In some respects they will be beautiful. Everything in nature has some redeeming feature.

It is not so in art. A work of art depends more upon one kind of beauty—beauty in one direction only—and its powers of pleasing are limited, and should it miss the one object or intention, it becomes an unmeaning and useless work, and not a work of art. It therefore behoves us to be extremely careful in selecting from nature, and the eye must be educated by constant study and examination of the best works of the old artists, so that it may become facile in appreciating that which is in nature suitable for the purpose required. The difficulty is to seize upon the beauty which we recognise and accept as beauty in nature, and so adapt it to our purpose that our sculptured ornaments may not only tell their own tale, but add to the general beauty of the work when they are in position. Ornament may be very good, but it may be thrown away by being either put in the wrong place, or its not being fit and suitable for its situation. The height, therefore, at which work is intended to be placed should be constantly kept in view. It must necessarily follow that an ornament, if intended to be placed 30 feet high, should have fewer lines, and should be more simple in composition than when arranged to be placed near the level of the eye; and, if intended for a greater height, should, of course, be of greater simplicity still.

In the study of any definite subject it is always necessary to go back, if possible, to all first attempts, for in these we often see a vigour and an amount of thought for which we look in vain in later developments. In these early works we see clearly what those first workers thought, and what they attempted to express. In almost all late work, we have but too often mere second-hand variations upon that which was done by the earlier craftsmen, and by far too finished representations of the original thought, which was usually stamped with vigour and decision, although the mere execution might be rough. Most late work shows a wonderful advance in skill, but not in art. We should strenuously endeavour to avoid this pitfall. Let us henceforth appeal more to the head, the hand, and the chisel, rather than to glass-paper and finish! Let us have sharpness and decision, in preference to smoothness and minutiæ!—the vigour of life and thought and not the tameness or pallid beauty of death!

In nearly all periods of art animal form has entered largely into every species of decoration, and has been closely interwoven with forms taken from the vegetable kingdom. There are various modes of rendering these forms for the purpose of suiting them to their several uses and positions, and a research into the principles which guided the artists of old would be of the greatest value. Take, for instance, the conventional rendering of the lion—what numerous types it assumed; first in the Egyptian, then the Assyrian, afterwards followed by the Greek, the Roman, and so on, age after age, through the Romanesque and Mediæval periods, down to the sixteenth century, each age stamping upon it the peculiar characteristics of its own art feeling, often teeming with ideal fancy, and yet imbued with sufficient natural character to establish its identity.

One mode of rendering animal and vegetable form, which is of the very earliest origin, and yet, more or less, running through every period of art, is in the flat; that is, representing them merely by the aid of two colours in painting and inlay, or two surfaces in sculpture, leaving the thing to be represented in its simple block form, trusting entirely to its outline for expression. Simple as this early mode may appear to be, it is extraordinary what a vast amount of character and force may be obtained by it, admirably suited for the purpose of subordinate ornamentation and enrichment of surface. If we look back to the Egyptian and the Assyrian, the Roman mosaic pavements, the "wall veil" inlays of Italian art, to the early tapestry and woven tissues, or to our own Mediæval tiles, brasses, wall paintings, heraldry, or manuscripts, we shall invariably find the flat representation of objects, more or less at all times adhered to, and as a principle never lost sight of.

The first enrichment of surface was by symbols and hieroglyphics in the flat, as in the Egyptian. With what force and decision the character of the vulture (Fig. 1), and other birds and animals are rendered by them merely by the aid of their block form. There is a wonderful strength and purity of line in Egyptian ornamentation, which is worthy of the most careful study. In the Assyrian we see with what delicacy of feeling flatness is again rendered by the low relief of their wall sculptures; although the sculptures themselves are carried to the highest point of finish, and without omitting a line which is necessary to their composition; but as if fearing that the principle should in any way be lost sight of by the excess of finish, a band of arrow-headed characters was wrought through the whole, to accentuate and thereby retain, as it were, the actual flatness of surface.

Fig. 1.

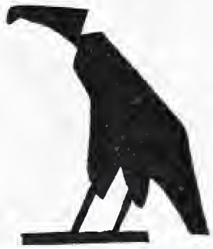
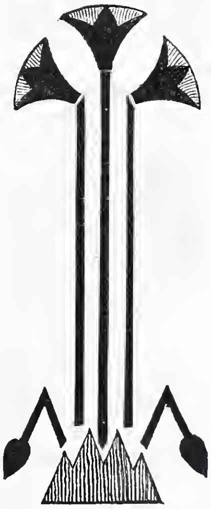


Fig. 2.



Perhaps no people have more beautifully idealized the vegetable world than the Egyptians. True, the sources from which they chose to draw art were few, but those they translated with beauty and simplicity. There are numerous examples of the very elegant treatment of the lotus. There are two on the walls (Figs. 2 and 3), one of which probably shows the calices of the flowers after the petals have fallen off. The symmetrical arrangement of a centre and sides answering to each other, appears to have been the origin of the Greek Anthemion ornament. On an Assyrian bronze bowl in the British Museum is found a small engraved ornament. It consists of a triple arrangement of what is probably intended for the lotus growing out of the water, and from the centre flower spring five other flowers, much after the same manner as the branches of the Greek lotus, in the Anthemion ornament, spring out of the centre husk (Fig. 4). A great similarity of form is to be observed between the Assyrian palm trees as sculptured on their bas-reliefs, and a border ornament from the Assyrian pavement in the British Museum; which, again, bears a very remarkable resemblance to the honey-suckle enrichment upon the cornice of the monument of Lysicrates at Athens; so much so, that it would almost appear that the palm tree was the true origin of the Greek honey-suckle. One thing at least is certain, that the Anthemion arrangement is much earlier than the Greek. In the Assyrian, we see another development of the Greek form of ornament, connected by the scollop or semi-circle, taken from an Assyrian ivory in the British Museum, representing a fully expanded flower alternating with a circular bud or pomegranate.

Fig. 3.

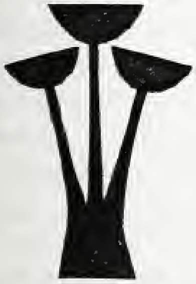
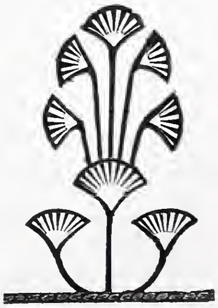
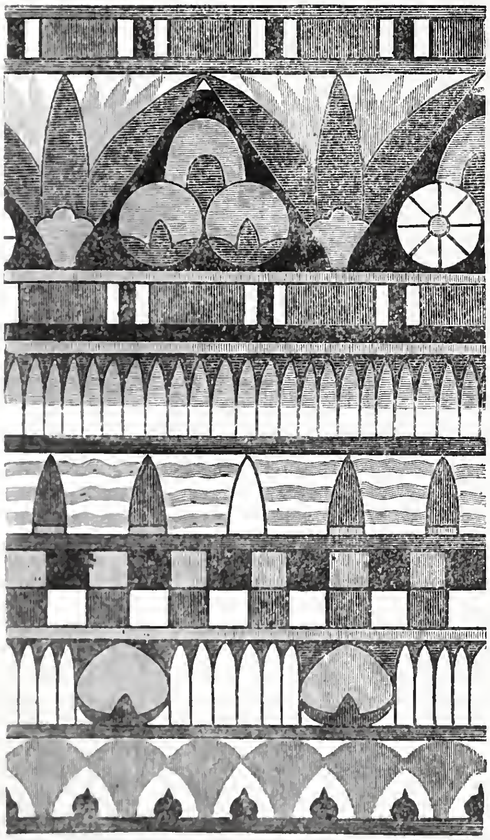


Fig. 4.



The highest class of foliated sculpture is that which expresses some thought or idea beyond the mere combination of leaf form—not exactly by a representation of the thing itself, but by adopting some form of expression which will be symbolical of that which is to be pictured forth, the meaning of which is rendered sufficiently clear and expressive to those who attempt to look beyond the mere surface of things. It is much to be regretted that language by symbolic ornamentation should be now so much neglected!—that we should be content with copying and recopying foliage which is not only bad in form, but utterly meaningless in its application! Yet the symbolic form is the most ancient mode adopted by mankind to express their thoughts, and the symbolic form of ornamentation followed as the most natural means of decorating their works. Let us look for a moment at the meaning and force of expression in some of the most ordinary of the Egyptian ornaments. As, for instance, in an ornamental border from a mummy case (Fig. 5). Here the closed bud of the lotus, the sacred lily of the Egyptians, are represented as appearing through the conventionally expressed water, while the fully expanded flower speaks of the waters having receded. The Egyptian cast his bread upon the waters of the Nile, hoping to find it after many days, and the plentiful appearance of the lotus told of the lowering of the waters, and gave promise of an abundant harvest. The lotus, therefore, was the welcome harbinger of plenty, and came to be regarded as an emblem of faith, speaking of a happy land, where this worshipped flower would henceforth bloom eternally. It may, however, be said that all such symbolic form of ornamentation is useless in our age—that we have a comprehensive written language, which will express our thoughts much clearer and more perfectly than by any such means. True, but symbols are the poetry of form, as verse is the poetry of language, and we are not so rich in poetic feeling that we can afford to give up this, humble as it may be. It is a language that all ages may translate, if they do but search for the thread which leads to its unravelment.

Fig. 5.



Mediæval artists speak to us of the Trinity by their triple foliage and other triune arrangements of form, and of their faith, by the loving way in which they dwelt upon and developed so many beautiful forms of the cross. Heraldry, again, was a language of symbols of the most interesting character, and heraldic symbolism entered very largely into mediæval decoration. It is still used to a limited extent, but it would be well if it were more studied, and its forms introduced among the ornamentation of domestic and other buildings. Monograms, also, if judiciously treated, and not too often repeated, are useful auxiliaries to ornamentation. There are several drawings on the walls in which a symbolic meaning has been sought to be given. As the parable of the Lilies of the Field, rendered somewhat after the Egyptian manner; the parable of the Wheat and Tares, as well as that of the Good and Bad Trees.

Wall surface forms the plain ground to architecture, as the canvas forms the ground to a painting, and it requires various modes of treatment to bring it into harmony with the architecture which it accompanies. We too often treat it as a mere uniform plain surface of stonework; but of late years we have acknowledged the value, in most of our modern churches, of following the old examples, by putting wrought quoins and dressings, and filling in the remaining wall surface with rougher and smaller stones of a different tone of colour. The advantage of this was pointed out by Pugin, in his "True Principles;" and architects have followed his advice ever since. It is a species of enrichment, by the aid of stone lines and colour, of the plain surface of the walling. Some architects have run to most outrageous lengths, and have striped up their wall surfaces with violently contrasted brickwork and other materials. This is, however, all working in the same direction, to gain, tone, colour, and enrichment upon plain surfaces, although it is often done without much judgment.

The early mediæval artists decorated many of their wall surfaces with sculptured or painted diapers, which were frequently introduced in the most artistic manner. The classic architects felt the same want as the mediæval—the necessity of treating ornamentally some of the plain surfaces of their walls; but, with the exception of their beautiful treatment of the figure for wall surfaces in friezes, they arrived at a much less happy result. The early Italian architects appear to have recognized the value of rough walling in giving tone and colour to their surfaces, and in imitation of this they proceeded, in their more finished works, to mark the joints of their stonework by strongly indented lines. This has come to be termed "Rustication," and the channels, "Rustics." The surfaces of the stones, also, were often left rough to gain more tone and colour. This was, however, nothing more than another mode of gaining a diapered surface for plain walling. In later work, the artists frequently picked out the surface of their quoins in senseless imitations of rockwork or vermiculated work, instead of which how much more elegantly they might be filled with foliated designs, either incised, or the ground sunk, leaving the ornament flat.

The foliage of the Anglo-Norman period is remarkable for great vigour and expression. It frequently contains the most clever developments of elegant lines combined with great simplicity of light and shade. The happy manner, too, in which the animal form is united to the foliated is very graceful. It is strange, however, that hitherto it has been the custom to consider the sculpture of this period, although acknowledged to possess some merit, to be, nevertheless, rude and barbarous. It is true that there are many of our Norman buildings which do not contain much sculpture beyond zig-zags, beak-heads, billet mouldings and cushion capitals; but there are parts in others which indicate a wonderful amount of art feeling, and will amply repay the most careful study. Among the Norman doorways, especially, there are sculptured portions remaining which evince the highest artistic spirit and power. The sculpture of this period is not highly finished. The trace of the tool, used in the most decided manner, may still be seen in many examples, evidently showing that the sculptor used it as the true artist would the brush—feeling only its value as a means of expressing his own mind, of creating those forms which he loved to picture forth, and not using it to give only smoothness and finish. We cannot help being struck, when looking at one of these works, that these men possessed a something—an artistic mind and hand—beyond what we possess at the present day. How is this? We have progressed in nearly everything, but in the true artistic feeling in architecture we appear to have retroceded. It is of no use blinking the matter, but such appears to be the truth.

The manner of treating the ground of their carved work shews in what spirit these old sculptors worked. It was not made smooth and all of one uniform depth, but as deep again in one part as it was in another, according to the intensity of shadow required, thus showing that they valued it simply as a background to their picture. We too often are only anxious to produce a neat and uniformly smooth and even ground, sometimes taking more trouble, and giving more thought to the ground than the carving itself, forgetting that the sole use of the ground is to produce shadow as a setting to the sculpture, in the same way that a dark background is made to heighten the artistic effect of a painting.

As a general rule we are afraid of recessing the ground to our carving, not appreciating its value in developing the beauty of form, or of adding brilliancy to certain parts by intense shadow. Instead of seeking for the light and shade upon the surface of the carving itself, as is too commonly the case, the ground should be driven back, without the slightest compunction, until the necessary contrast is obtained.

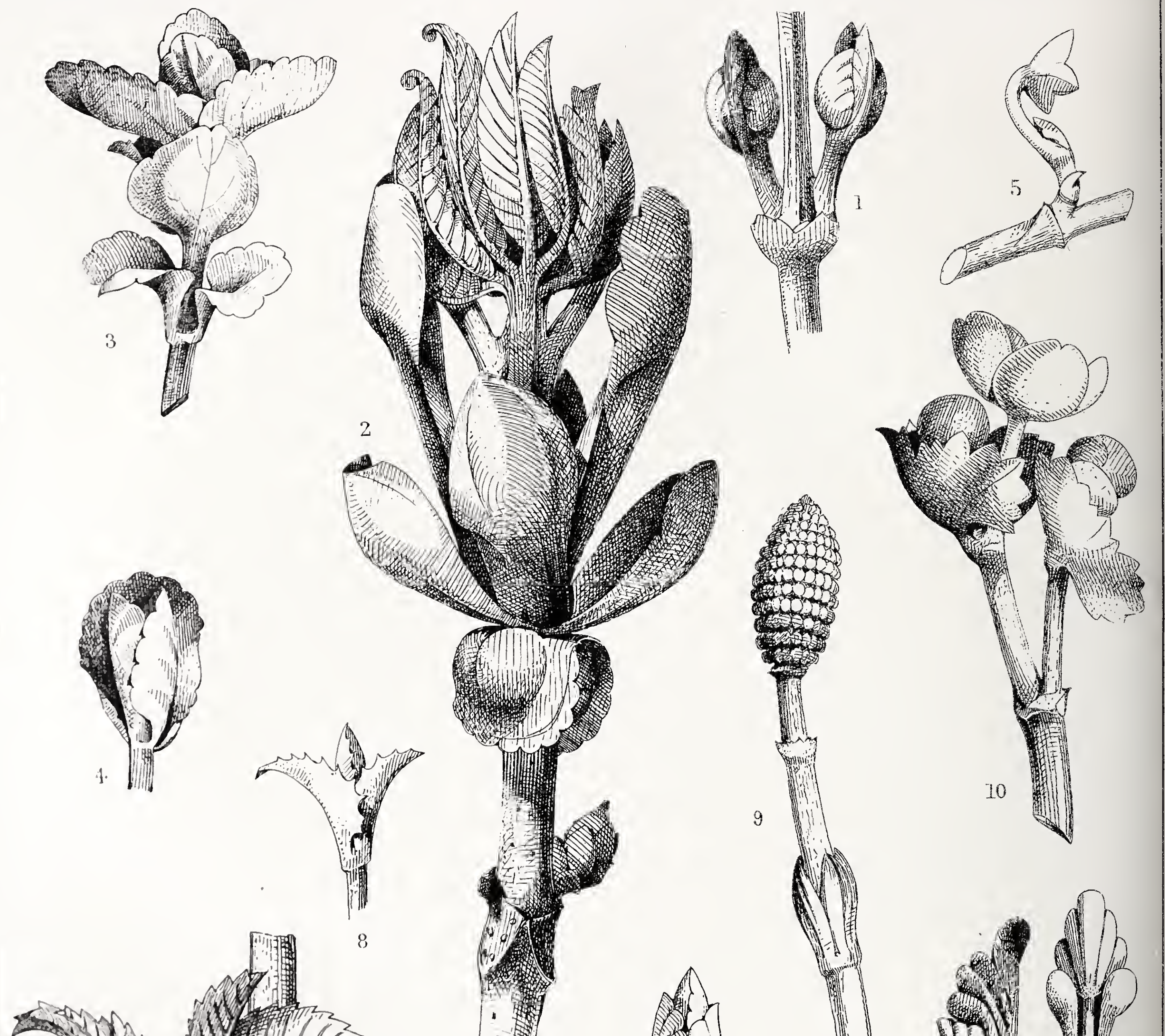
Very little undulation of surface is necessary in the sculptured representation of leaves; but the ground should be deeply recessed for shadow, so as to give value and brilliancy to their radiating or other forms, which would be marred by too much light and shade upon their surfaces. This is a point specially to be attended to, in order not to lose the beauty of form when it has been once secured, either by making the form too detailed, or putting too great an intricacy of light and shade, so as to interfere with it. Simplicity of composition, both in form and light and shade, is a point at which the artist should most strenuously aim. It is far easier to get into minute complication and subdivision than it is to adhere to simplicity. Complication is a power which is very attractive, it is often mistaken for beauty, and it is one which is not easy at all times to avoid. It is a fault which even nature is sometimes led into by the cultivating hand of man, at the sacrifice of her original and most beautiful forms. This may be easily seen by comparing the cultivated garden forms with the simple and original wild ones.

We see thousands of beauties in nature on every side of us, and if we only knew *how* to apply them to our own purposes, we should be able to create a new world of art beauty. But that is what we have to ask ourselves. How can we apply these elegant forms and subtle combinations? We are puzzled and amazed at their wonderful intricacy and perfection—and yet how imperfect! We attempt to analyze the beauty of natural lines—but how often they upset all our own laws of beauty! If we are tracing the intricate network of a leaf, we are delighted at the elegance of the curves; but all at once we come to a most awkward turn—a wilful kind of vagary that entirely disagrees with all our notions. We cannot see why, nor wherefore, but are obliged to give up our search and return to our own beaten path—our time-honoured way of producing what we term "the beautiful." We smooth all down to our own tangential curves and lines. We see nature literally revelling in all kinds of odd corners and junctions, without two forms being alike, "kicking over the traces" in every direction; and yet all is beautiful! Beautiful without effort—it seems even beautiful without being able to help being beautiful! We see the beauty, we acknowledge it and appreciate it; but how can we apply it? We seize upon it, we work upon it, and we think we have it securely and firmly at last, but unfortunately it somehow flies from our own grasp, and nothing is left under our hands but a dull dead form. We may have been very near success, and yet have failed time after time. The life and the vigour which should stamp our works with beauty are not there.

How often will such thoughts as these occur to those artists who closely and ardently study nature for the purpose of applying its forms to art! But this should not produce discouragement; for, with steady perseverance and study, at last will come a sudden thought, created, it may be, by a happy state of mind, or by some new point of view, which will quicken our every day forms, and enable us to add that life to our works, without which all our efforts are of little value. Often may we have walked over the same country, or have examined the same flower, without our being able to detect anything uncommon in it; but something may happen to draw our attention to certain features, which will cause us to see beauties of which we were before totally unconscious. It suddenly becomes an old friend with a new face. We are then in a position to take advantage of our fresh views for the purpose of art:—

> "—— But still must needs confess
> That 'tis a thing impossible to frame
> Conceptions equal to the soul's desires;
> And the most difficult of tasks to keep
> Heights which the soul is competent to gain."
>
> WORDSWORTH.

Plate 1.



B U D S.

J.K. Colling del.

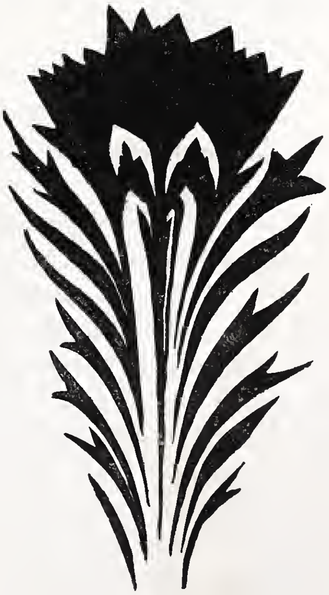
J.R. Jobbins.

To adapt nature successfully to art purposes, it is absolutely necessary to study it intensely and constantly, and while it is in full vigour and life. It will not do to draw only the dead inanimate form. Nature should be watched and examined at different times of the year, and viewed in different positions. Every part of a plant should be carefully drawn that strikes the eye as elegant,—the beautiful little leaf-buds as they unfold themselves, giving, as they do, some of the most elegant and energetic lines that can be conceived; the leaves, with their form and modelling, their mode of springing and clasping the stem; the construction of flowers; and then the seed vessels and fruit. Every part requires to be examined with attention, often with the aid of a powerful magnifying glass, and carefully drawn to form a store for future use in designing for ornamental art.

Strong decided lines and freshness of form are so frequently contained in leaf-buds and all young developments of plant growth, that they offer an extensive field for all who are in search of elegant form. The folded and half-expanded leaves, also, give frequent charming suggestions. The fresh and delicate colour of leaf-buds, and their contrast with the older and more sombre parts, is in itself a study which cannot fail to lead to important results, if pursued with an appreciation of the delicacy of contrast and the harmonious combinations of self colour. Their arrangement and delicate plaiting is sometimes highly symmetrical and regular, throwing out strong powerful angles, which appear almost as if standing ready for the adaptation of the carver.

Buds issue from the axilla of the leaf-stalk as shown by ths buds of dog-wood (No. 1, pl. I). The old leaves having been shed in the autumn, and the young buds commenced to grow on the return of spring. When the leaf falls off in autumn the young bud is protected from the frost by numerous scales and envelopes, which burst and fall off in spring as the bud opens, as shewn by the bud of the horse chestnut (No. 2, pl. I). The scar left by the old leaves is plainly seen in the horse chestnut long after the leaf is gone. Opposite or cruciform growth, with firm fleshy leaves, is seen in the wild mint (No. 3, pl. I). The smaller example (No. 4, pl. I) shews how a bud may be frequently studied to advantage—that is, by dissection. It has one of the outer leaves removed, shewing the inner bud reposing in the hollow of the leaf. Others may be drawn in this way, after the outer leaves have been stripped off, and shewing the very embryo of the bud, but should be magnified perhaps to twenty or thirty times their natural size. Delicate little forms, of the most exquisite grace and beauty, may thus often be found which would otherwise totally escape notice. The innermost recesses of nature must be brought forward to the light, and nothing, if possible, left unobserved and unnoted. Unless gone into in this manner, and with an intense determination to study every part, whether large or small, one can hardly say that he has been observing nature in search of the beauty of form. Who would have imagined that the minute ivy-buds (Nos. 5 and 15, pl. I) contained such graceful lines as they do? I had looked at them many times before I discovered what they were like, but when I had found them, carefully drawn them, and saw the infinite variety of beautiful forms that they presented, I considered myself amply repaid for my trouble. I have not yet applied them to my satisfaction, still there is an elegance in them, of which others, probably, will be able to make more fortunate use. Look, also, at the minute buds of the common garden rue (Nos. 12 and 13, pl. I). What classic forms can be more truly elegant? Compare it with the graceful pencilling of the colour on the petal of a white geranium (Fig. 6). How

Fig. 6.

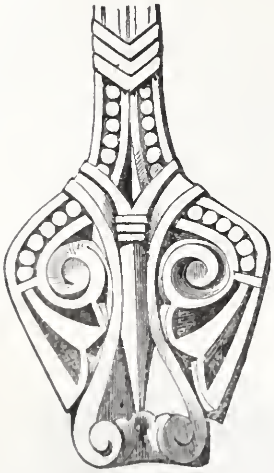


symmetrical and yet unsymmetrical! It would be difficult to say for what particular purpose they would be applicable, yet surely, if the mind is stored with such forms as these, their application will certainly follow.

For vigorous lines look at the wild rose-bud (No. 6, pl. I), or the marsh marigold (No. 10, pl. I) with its elegant little flower buds nestling in the hollows of the leaves. Then, also, observe the quaint form of the horsetail (No. 9, pl. I), with its peculiar frills upon its stem. Holly-buds (No. 8, pl. I) have much the character of the Greek scolloped foliage, and the little buds of endive (No. 7, pl. I) put one in mind of sheaths in early acanthus foliage. The ground ivy (No. 11, pl. I) appears as if it might be wrought into a piece of ironwork, while the dead nettle (No. 14) looks as if suggestive as the lower portion of a finial.

Fern fronds, again, more especially when in their young state, when they first issue from the ground in the most minute and delicate spirals, are very beautiful and highly suggestive for ornamentation. The lines that the common brake assumes in different stages is frequently very elegant, and there are many other ferns which are extremely suggestive, as in the perfect fiddle-head form of the polypody, the twisted spirals of the little maiden hair fern, or the quaint form of the lady fern, almost reminding one of a carved arm-rest.

Fig. 7.



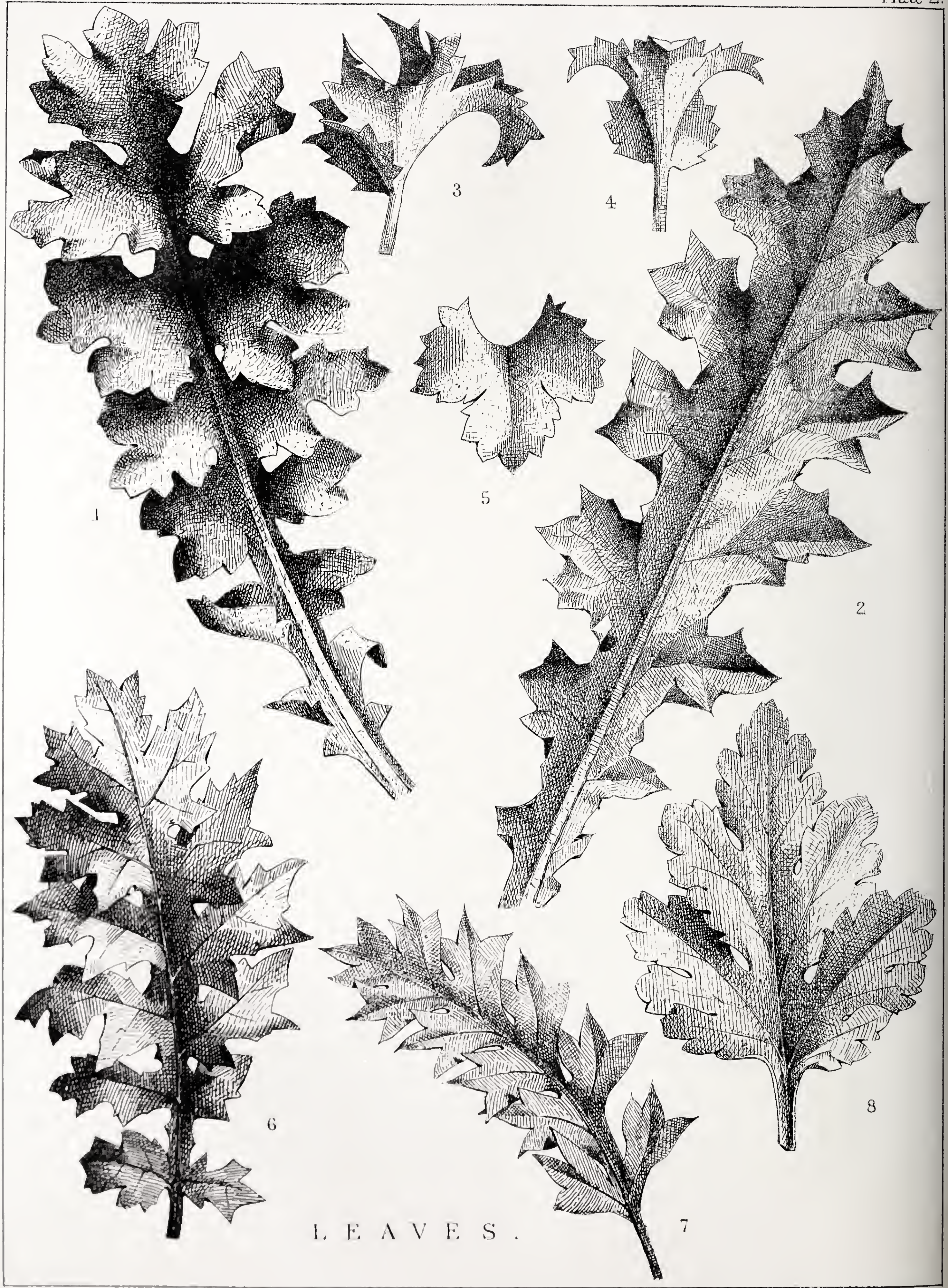
Ferns gave the *motif* to the old carvers to much of their foliage, although, perhaps, it is not very easily to be recognized, as they purposely avoided direct imitation. The brake, however, is to be traced in the foliage of our Anglo-Norman period as in the example (Fig. 7) from one of the capitals from the crypt of York Minster. There is also a capital in Shoreham Church, Sussex, which is clearly taken from the fern tribe. A series of stout fronds are springing from the necking, with the voluted heads turning over in the upper part of the bell, and a smaller partially expanded frond below. The brake is also evidently the type of the characteristic curled leaf of the Norman period, but one part of the leaf was made to turn outwards, instead of the whole curling in upon itself, as is the case in nature. The *crochet* of the early French capitals were probably suggested by the spirals of fern fronds, combined with the head of the classic leaf or the angle volutes of the Corinthian or composite capitals.

It is not necessary for me here to explain the different forms of leaves. They vary from the most simple to the most complicated, and embrace some of the most elegant forms which can be imagined.

The modelling of the surface of leaves is a point of very great importance, requiring careful study, and is secondary only to the form of the leaf itself. In fact, the form depends very much upon the judicious and harmonious modelling of the surface, for bad modelling, or coarsely-cut lines on the surface, will interfere with, and destroy the form of the leaf, be it ever so beautiful. We see in nature a great abundance of the hollow leaf, from the fact that one of the functions of the leaf is to collect the rain and carry it by its channels to the plant itself. Convex modelling can, however, be equally well studied from nature by observing the backs of leaves. As a rule, carving should never be over-modelled on the surface, but kept simple, and with just sufficient flow to prevent its looking stiff and formal. There should also be variety, as in nature. Unfortunately, modern carvers cannot understand simplicity of modelling, and they ruin their leaves by lines and deep shadows.

The Gothic sculptors of the decorated period generally adopted the rounded bulb in the centres of their leaves, which was repeated in each of the lobes, often giving such an amount of sharp light and shade as to entirely destroy the beauty of their outlines. In the Classic, foliage is frequently carved with

Plate 2.



L E A V E S.

J.K.Colling del.
J.R.Jobbins

deep lines or channels running to the centre of each division of the leaves—no division scarcely ever appearing without its channel. In the early Greek the modelling was much more simple, being worked into a slight V section (Fig. 8), and the outline of the lobes of the leaves partook very much of a zig-zag line, and the eyes separating the lobes were circular. The foliage from the Monument of Lysicrates is of much the same character, and the V section is preserved; but the lines are more flowing, the outline is more *spiky*, and the work has apparently a very high degree offinish. The foliage shewn in Fig. 9, is part of the husk, out of which spring the very beautiful scrolls on the roof of the monument. If these two last examples, which present the type of the Greek acanthus foliage, are compared with the natural leaf of the *Acanthus mollis* (No. 6, pl. II), from which this foliage is said to be taken, the likeness will not be found very striking. It is like several kinds of foliage, without being a copy of any one example in particular. Compare it with the thistle (No. 2), which appears to have much of the zig-zag outline. We have the sharp, spiky lobes again in the *Grevillea Acanthifolia* (No. 7), an example obtained from Kew Gardens, but from what country it comes I am not at all aware. In the sea holly (Nos. 3, 4, and 5) the head of the acanthus leaf, as it turns over in leaves of the Corinthian capitals, is seen to be a perfectly natural formation. These examples serve to shew that the Greeks adopted certain principles in nature, and that they did not confine themselves to a servile imitation of any particular leaf or plant.

Fig. 8.

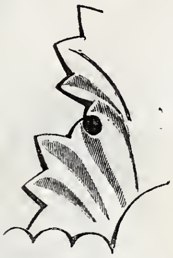
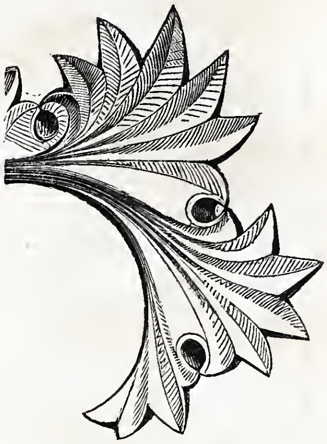


Fig. 9.



The sharp foliage of the Greek is never found in Roman foliage. What is called the acanthus leaf of the Romans is as different as possible from the acanthus of the Greeks. In the Roman, all the lobes are rounded, or nearly so, and the moulding of the surface of the leaf is extremely violent. The part in which the eye occurs, forming the main divisions of the leaf, being sometimes worked up almost like a pipe; as in the leaves from the capitals of Mars Ultor (Fig. 10) and Jupiter Stator at Rome (Fig. 11). Now these, with the Greek, form two very distinct and separate types of what is called classic acanthus foliage.

Fig. 10.

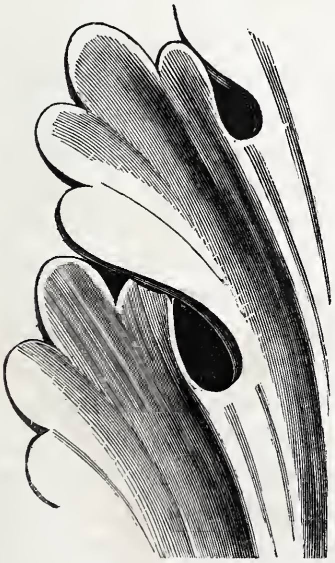
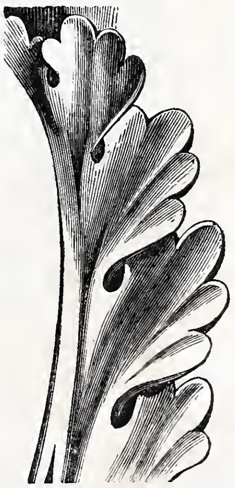


Fig. 11.



There is, however, another variety of foliage in the Roman, some of which is said to be of Greek workmanship. I allude to the very rich friezes from the Trajan Forum at Rome, and the frieze and pilaster preserved at the Villa Medici, and other examples of the same class. This foliage appears to be taken from soft lobe leaves, such as the chrysanthemum (No. 8, pl. II), and the yellow-horned poppy (No. 1). The lobes are not exactly round, but the points are obtuse and soft, and, like the natural chrysanthemum leaf, each lobe has sub-lobes, besides other still more minute divisions. There are thus, two principal antique types of the acanthus—the sharp and spiky-lobed foliage of the Greeks, and the round and soft-lobed of the Romans.

In the styles which arose after the commencement of the Christian era, the ancient Greek appears to have been the type followed for the foliage of the Byzantine or Eastern art, while the Roman gave its colouring to the foliage of the Romanesque or Western art. In the foliage from Santa Sophia and the Church of St. John at Constantinople, which were probably erected by the Emperor Justinian, the similarity to the ancient Greek foliage is plainly seen, as in the example (Fig. 12) from the Church of St. John. The Byzantines also erected churches at Jerusalem, under Justinian, but of which little more than one fragment is supposed to be remaining, known as the Golden Gateway. This has been ably illustrated and described by Comte de Vogüé, in his work lately published, on the *Temple of Jerusalem.* A diagram of one of the leaves from this work is given (Fig. 13), which is evidently of Byzantine workmanship, and has a strongly marked Greek character.

Fig. 12.

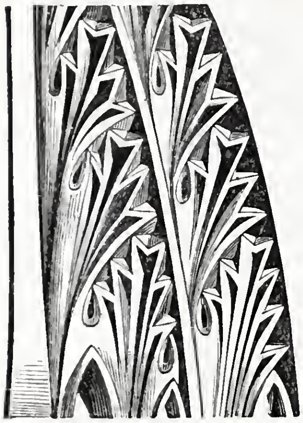
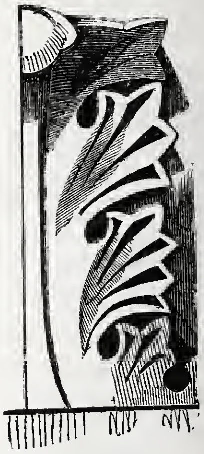
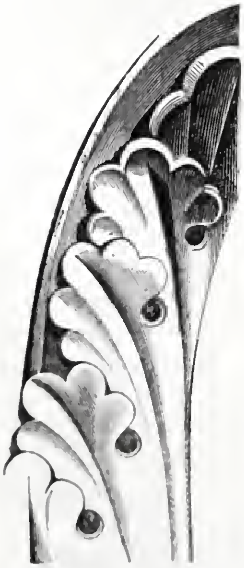


Fig. 13.



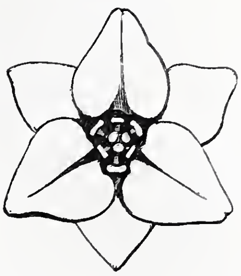
In the Early architecture which followed the Roman, the foliage retained the round lobe, although there are many cases where it is evident that there has been a Byzantine influence acting upon it. This may be distinctly seen in our own Norman foliage, where the V section of the Greek is continually made use of. In the early French capitals of the eleventh and twelfth Centuries we see clearly the classic type of the Roman foliage. In the foliage of the choir, and Trinity Chapel of Canterbury Cathedral, which is precisely of the same character as the early French, and without almost a single exception, the foliage will be found to be round lobed. The example (Fig. 14) from a capital in the South transept of Canterbury, is precisely of the same character as the leaves from Mars Ultor at Rome.

Fig. 14.



But, to leave the subject of leafage, I would say a few words, in conclusion, upon flowers and fruits. Of all things which exist in nature, flowers, perhaps, are the most universally allowed to be beautiful. The variety of their bright and lovely colours, with their great difference and elegance in form, united to the exquisite odours which many of them possess, have recommended them from time immemorial to our senses. Where can we see a scale of colours such as we find in flowers? Colours of the brightest hues, as in the scarlet geranium, or of the most exquisitely soft and subdued tones, as in the tea rose. Then, again, we have the most charming mixtures, combinations, and contrasts, as the yellow, purple, and white of the *gilia tricolor*; the purple, orange, and green of the woody nightshade; and many others. How beautifully the greens of the leaves of plants are made to harmonise with the colours of their flowers? The bright green leaves of the yellow flowers, the dull neutral greens of the blue flowers, and the reddish-green leaves of the red flowers, all show from what consummate palette the various combinations have proceeded. It would amply repay any one who would study the subject of colour in flowers, and no doubt it would add much to our knowledge of the use of colour in art, if the subject were carefully explored. The forms of flowers are very various, but they are mainly divided between those which radiate from a centre, as in the common daisy, and those which are symmetrical or alike on each side of a centre line, such as the pea and bean. The first of these divisions, the radiating, are the flowers which are mostly used in art decoration. Flowers which radiate from a centre are often formed upon the triangle, as the lily, shewn

Fig. 15.

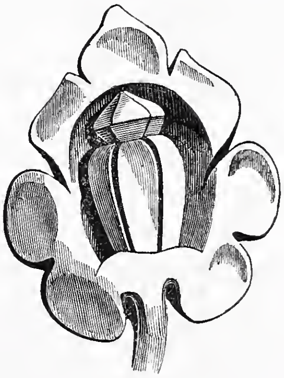


by the diagram (Fig. 15), suggesting the form of the six-pointed star or double triangle. The triple arrangement is seen again in the wood anemone, with its involucre of three leaves below the flower; also in the iris or fleur-de-lis, which has three petals turning up and meeting in the centre, while the other three, alternating with them, turn downwards in a very elegant and graceful manner. This flower was the type of many of the conventional forms of the Anglo-Norman and Early English foliage. Flowers of four petals are not numerous: but the minute flower of the rue is a beautiful example arranged upon the square form. The bud of the flower shows the four petals folded, and the next figure gives the flower fully expanded, and shows its perfect cruciform arrangement. The petals are hollow, with the edges folded, and in the hollows lie four of the stamens. In profile one of the petals is shaped almost like a Gothic crocket. Although so minute, and so utterly insignificant to the naked eye, yet when looked into and examined with a powerful glass, it is one of the most quaint and interesting flowers which can be met with. The seed vessel, when dry, opens into an elegant little quatrefoil.

The cruciform arrangement of leaves and flowers was used at an early period of mediæval architecture, in square diaper work, and from the convenient form it assumed, the square flower, as it is technically called, remained a favourite to the latest period of mediæval art. Its type in nature is more clearly seen in plants and trees bearing opposite leaves, when looking upon the extremity of the branch, as in the lilac and maple.

The most common number of petals in flowers is five, as in the common dog rose, primrose, cinquefoil, and many others. In the garden convolvulus the pentagonal form is very beautifully developed, and the scarlet five pointed star is charmingly inlaid on the rich purple ground. The pilewort crowfoot has eight petals with a triple calyx, and the coreopsis also has eight petals, each with triple ends. The comfrey and heliotrope grow in a spiral form, offering a beautiful suggestion for decorative treatment. The cuckoo pint, or *arum maculatum*, has a very peculiar flower. It has no corolla, but the stamens stand up within the spathe or hood in an oblong oval spike, and the ovary is concealed below. This plant is said by Monsieur Viollet-le-Duc, "to have inspired our sculptors from a very early epoch." I have not, myself, observed any indications of its introduction in early work in this country, but it is evident that in later work—the fifteenth century—it formed the *motif* of many of their flowers, as in the example (Fig. 16) from Swaffham Church, Norfolk. There are many other flowers in "perpendicular" work of the same type, consisting of a large seed, surrounded and growing out of foliage, and which were probably taken from the arum.

Fig. 16.



In the Renaissance and Italian styles it was common to introduce large bunches and massive swags of various kinds of fruit, strung together with leaves in the most artificial and inartistic manner. Unfortunately, and to the destruction of all good taste and natural feeling in foliage, the same form of decoration is still very largely pursued in numbers of our modern buildings, both in England and France. It is far better to introduce fruit as naturally belonging to the foliage that it accompanies, and for its beauty and opposition of form.

In mediæval decoration fruit is not much introduced among foliage. The maple is sometimes accompanied by its winged seeds, and the thorn by its berries. The oak is frequently shown with its acorns, and the vine with its grapes, sometimes also nuts are introduced with the hazel. Beyond this, fruit is seldom seen; but there can be no reason, if the fruit will add to the beauty of the work, why it should not be introduced more frequently.

As a general rule all carved ornamentation, placed upon a surface, whether it be of leafage, flowers or fruit, should be carved out of, or within, the surface itself. There are exceptions; as, for instance, when extreme boldness is required, parts of the ornament may be advanced far beyond the line of surface. Still the ground from which it springs should be recessed or sunk; that is, the subject should be laid in a panel. It gives truthfulness to the work, and avoids that stuck-on appearance so commonly practised in modern architecture, which appears to be constantly looking out for projections upon which to place ornamentation. As upon pediments, cornices, key-stones, and other parts projecting beyond the general surface of the work—not at all taken out of the surface, but added to it—they become parts stuck upon the structure. The ornamentation is placed outside, hanging frequently in festoons over the surface to be decorated, resting upon it or added to it, instead of being formed within it, and becoming a portion of the work itself. Architecture becomes a mere peg upon which to hang the fancies of the decorative artist, whose object is to cover up the architecture wherever he can extend his ornamentation—a system which must lead architecture to the lowest depths of degradation, for ornamentation thus appears to be endeavouring to usurp its place—a vicious principle which cannot be too strongly condemned.

THE PRESIDENT, Mr. A. J. B. BERESFORD-HOPE, expressed his hope that this most excellent and interesting paper would not pass away without giving rise to a discussion, inasmuch as many of the points raised deserved consideration and debate.

Mr. WM. WHITE, Fellow, said, having been much interested in following Mr. Colling's paper, through all its details, he would offer one or two remarks on the subject which had been brought before them. Mr. Colling had explained to them some of the systems of outline, modes of dealing with ornament, and so forth, in early work; but he went on to lament that there appeared to be no originality of thought and feeling, somehow or other, in modern or even in late mediæval works. Mr. Colling did not, as far as he understood, pretend to say how it was that character and feeling had been lost, but he lamented the loss. In the earlier part of the paper it appeared to him Mr. Colling had himself supplied an answer to the very question which he afterwards raised. There could be no doubt whatever that the cause of that degeneracy had arisen almost entirely from the increasing practice of a mere imitation of the outward expression of the form, rather than the following of the systematic and symbolical and poetical treatments which pervaded the whole of the foliage of the earlier periods. He said this, because it was in those earlier periods, as Mr. Colling had observed, the greatest power and the greatest feeling were displayed in the foliage. And it was found that in those times they did give prominence in all their works to the botanical and organic construction of the plants, and followed a systematic and symbolical and poetical arrangement in all that they did. He knew it was the fashion in the present day for many to say, "It is all very well to profess to follow a symbolical arrangement, but what is the good of symbolism if it can be read by none but by those who are initiated or instructed in all its interpretations?" He said it was not necessary for everyone exactly to interpret all that had been expressed therein; but it was evident that where any such essentially systematic and intelligent arrangement had been followed, there they would find the most perfect and most beautiful expressions in art, which appealed to them, not because the exact mode or nature of their arrangement was evident to the popular eye, but because it was there,—pervading the work. Reference had also been made to the subject of the colouring of flowers. Colour was a subject which he (Mr. White) had studied to some little extent, from his own intense delight in colour itself. And Mr. Colling had referred to the manner in which the foliage and flowers of all plants, diverse though they were in their several kinds, thoroughly harmonized throughout. It was a fact, though perhaps not generally known to those present, that if they picked to pieces the stem and leaves of any plant, they would often, by the naked eye alone, and invariably by a careful microscopic examination, find traces of the colours of the petals and flowers in those leaves and stems. He said this was a fact which they would do well to take up and work out for themselves,—a little more scientifically than was commonly the custom now-a-days to pursue such studies,—and it might be followed out by illustrations, drawn perhaps to a large scale, in order to test the effects of such treatment in the general harmonizing of colours,—introducing similar minute fibres of different colours within the other, which should show how and to what extent those harmonies existed. There was one other point, as to fruit not being so commonly used in mediæval work as, it was alleged, it ought to be, and indeed might be. He thought there was good reason for that. He thought the chief botanical elements of construction and organization were much more visible in all the parts of flowers—in the leaves, buds, petals and other parts—than they were in the full fruit, and the botanical elements of the fruit itself were only to be seen when it was dissected; and fruit was intended rather to be enjoyed by dissection of another sort—in the eating—than in its representation in wood and stone. He had great pleasure in moving a vote of thanks to Mr. Colling for this very interesting paper, and he hoped some others would also express their views upon it, from which they might pick up a few further ideas.

Mr. Edwin Nash, Fellow, said, that following up the remarks which had been made, he would observe that no special notice had been taken this evening with regard to the geometrical forms of flowers, which, in fact, possess an immense variety of mathematically geometrical forms. Taking the very familiar thing—the ivy leaf—it is found that many of the leaves are composed of double triangles, and this was only one of numerous instances. Architectural foliage usually requires geometrical arrangement, especially in surface ornamentation, as Mr. Colling so well shows by the numerous and very beautiful designs which he has produced. He had great pleasure in seconding the vote of thanks to Mr. Colling.

Mr. Digby Wyatt, Fellow, had much pleasure in drawing attention to a point of great merit in Mr. Colling's contribution to their entertainment and instruction. He could not but feel that scant honour had been done to that gentleman with respect to the really noble industry he had displayed in providing such copious and beautiful illustrations to his paper. Mr. Colling had not only studied and thoroughly elaborated his essay, but he had brought before them tangible and graphic evidence of the importance of his theme alike to the student and professor. Mr. Wyatt thought that there was one point which had a little slipped from Mr. Colling's attention in dwelling upon the various special conditions which generally served in practice to determine the artistic treatment of foliage,—that was the process of execution or manufacture by which the required ornament had to be produced. Upon this,—upon the character of the material in which the decoration had to be wrought,—and upon its position in relation to the points of vision, and the sources of illumination, were to a great extent dependent, not only the form of all well designed ornament, but its relative intricacy or simplicity, together with the mode in which its leading lines and parts required to be set out, both on the surface and in section. Another extensive branch of investigation might take its point of departure from the paper the meeting had just been favoured with, viz., the questions as to the extent to which direct imitation of nature might be carried in ornamentation with successful results under varying conditions; and under what circumstances a purely conventional treatment of form became indispensable. Direct imitation of nature had been frequently introduced into architecture, painting, and sculpture, as was well known, with the best effect at various epochs in the history of art; while in what the world had concurred in recognising as master-pieces in architecture, it had also been occasionally introduced ornamentally with very happy results. On the other hand, the educated eye was constantly falling upon direct imitation of nature used for structural embellishment in forms which appeared most repugnant to good taste. It behoved the designer, therefore, to study the conditions which made natural imitation beautiful in one case, and displeasing in another. Important canons for the guide of their practice might thus be eliminated. Good writers on imitations in the fine arts had never fully treated the subject of the limits under which the architect specially had to work in this respect; though some of the dicta of such writers as Quatremère de Quincy, Winckelman, Dyce, Eastlake, Owen Jones, and Ruskin were worthy of careful notice. The subject of Mr. Colling's paper, which so amply illustrated the unerring beauty of nature, forcibly reminded the speaker of a passage which occurred in the paper by Mr. White, read at the preceding meeting. Mr. Wyatt regretted he had not been present on that occasion, or he should certainly have felt it his duty to enter a respectful protest against such a sentiment as was enunciated in the following passage:—"Utilitarianism may be one *element of beauty* amongst many more important ones . . . . Beauty lives in a far higher element; *for the maximum of beauty, in kind no less than in degree, is found mostly with the minimum of utilitarianism.*" Now, he must say that he thought that this was a most dangerous article of faith; because if they considered what really was the maximum of beauty in "*kind*," they would instinctively be led to recognise it in Divinity, and the purest abstract moral qualities. In these they would find the highest attributes of utilitarianism, in a beneficent adaptation to man's necessities, combined with that which was the great prototype of the most ethereal and symbolical beauty. When, on the other hand, they turned to the question of *degree*, they would find that all those subtle beauties of nature, upon which Mr. Colling had so well dilated, were generally referable to some direct use,—some utilitarian end,—essential either to the structure and purpose of the object, or to man's enjoyment of it. Unless a lofty view of utilitarianism was taken and maintained, they would always be liable to misapprehend the wonderful harmony between useful purpose and exquisite form which the divine will had apparently ordained should pervade creation; and which he (Mr. Wyatt) certainly thought the architect, more than any one else, should systematically endeavour to emulate.

Professor Kerr, Fellow, was anxious to support most cordially the vote of thanks to Mr. Colling, chiefly on account of the large number of excellent and instructive drawings which were exhibited as illustrations. One thing which could not fail to arise in the minds of many persons would be that question of the "art-workman," which had of late years been so much discussed. As regards architectural work, this question very much turned upon the enquiry whether the architect could be expected to express with sufficient precision his designs for ornamentation by drawings of his own, or whether some one else must do it for him by modelling. Looking at the drawings now before them he would say, that he had great faith in the idea that the delineative powers of an architect, if directed to the proper style of drawing, would prove equal to the representation of the most difficult designs of foliage. If such a delineative skill could be perfected, the responsibility would of course rest more directly upon the architect; but why not? For when they found an architect complaining that he could not get art-workmen to follow out his ideas,—to supply that "vigour" and "thought," and so on, which were necessary, the suggestion must needs arise—why did he not supply all this himself? The answer would turn on this,—whether delineation on the flat is really competent or not fully to represent the ideas of the designers of sculptural ornamentation. This question was a very interesting one; and being himself accustomed to draw and not to model, and being now speaking to persons who as a rule were accustomed to do the same, and feeling, as he confessed, that it was impossible to introduce modelling into the ordinary education of young architects, he would like to hear the opinion of some others present as to how far delineation on the flat had proved in their experience capable or not of expressing in difficult cases the intention of the designer.

Mr. Burges, Fellow, made a few remarks on the difficulty of getting his drawings carried out by the so called art-workman.

Mr. White begged to say one word in explanation to what had fallen from Mr. Digby Wyatt, in reference to "utilitarianism," inasmuch as he might not have expressed himself with quite sufficient clearness in the passage alluded to. But it still seemed to him that that which most eminently proclaimed itself utilitarian to the popular eye, was not that which was most beautiful; and that beauty was mostly found in works that aimed at something more than mere utilitarianism.*

Mr. THOMAS MORRIS, Associate, said he would ask leave to make a suggestion, which might lead to the raising of a School of Art Workmen—a school that seemed just now to be much needed and much desired. Those acquainted with mediæval work would not fail to recognize in that work an immense freedom of handling by the carver. The Anglo-Norman beak-head and other enrichments would exemplify this. In the succeeding style, the tooth ornament and the dog-head, showed what could be done by a few well-directed strokes of the tool. They all worked in fact with the same intellectual and unhesitating eye to effect that the scene painter now does. They produced very great results with very little labour; and there was evidently an art-perception in those times superior to that ordinarily possessed by workmen of the present day. Thus, by whatever cause produced, it must be admitted on all hands that the carved foliage of the thirteenth century, of which Mr. Colling had spoken (but of which he had given no examples) was the most beautiful production of any kind of English art whatever. Though strongly marked by the modification of nature, termed conventionalism, it stood out as one of the great triumphs of English art, and he thought also of the art of any nation or time. His chief object, however, in rising, was to say, he thought a school of such work might be easily revived, if the Government could be induced to establish workmen's studios. Thousands of young workmen would, he felt certain, be content to pass their evenings in the study of geometry, free-hand drawing, and modelling, and in acquiring such practical knowledge as would enhance the value of their handiwork and enable them to follow out the indications they received from the architects.

THE PRESIDENT, Mr. A. J. B. BERESFORD-HOPE, said, the time having arrived for closing the discussion, which had been a very interesting one, he would say with reference to the point raised by Mr. Morris, that something like what he proposed already existed in the Schools of Art throughout the country, and in the Architectural Museum. He should be glad to see more schools for workmen, but he confessed he did not go with Mr. Morris in the hope that they would be set up by the Government, but rather looked to a free art movement. With regard to the question they had been discussing, there was one point to which the ability and zeal of Mr. Colling could do justice, in supplement to the paper of that evening, which he thought would be worth his working out, viz. something like a theory upon the question of scale—under what conditions foliage must be represented of an absolutely natural size—under what conditions it might be, or should be, diminished; and also under what magnified. No general law could, he believed, be laid down, but every plant, or class of plants, carried with itself its own special and varying probability of enlargement or diminution. Another point to be considered in looking for subjects for ornamentation, was how far the scientific horticulture of this country had developed the growth of trees of other countries, suitable by their mathematical forms, or the luxuriance of their leaves or flowers for architectural treatment. Take, for instance, the stately *araucaria.* What form of architectural foliage could be more regular that the four or five buds at the crown of the young shoot of the *araucaria.* Again, how rich and large a leaf was that of the *dialia suboldii*, like a fig-leaf, but more still strongly articulated. He merely mentioned these few instances that occurred to his mind at the moment, and in either case quoted a lovely tree. But again, among under growths there was the large and rich foliage of the india rubber plant and an infinite variety of ferns luxuriating in our hot-houses, not to mention the abnormal exuberance of the orchidaceous tribe. He would not press the point, but he could not resist the conviction that the growth of scientific enterprise had antiquated the theory which relied exclusively on indigenous forms of vegetable sculpture. He was sure the meeting would cordially adopt the vote of thanks to Mr. Colling, not only for the paper, but also for the magnificent collection of illustrations which he had hung on the walls. He was only sorry that so few should have seen them; but if consonant with their producer's convenience, he would petition Mr. Colling that they should be left where they were for a few days for better consideration than could be given to them that evening.

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* Works of painting and sculpture, and every class of the highest art, like the petals of flowers or the rich hues of nature, are surely for the delight of the eye, by their beauty, rather than for any "utilitarian" purpose; in them, indeed, its very idea is singularly absent.

Mr. Colling, Fellow, in reply upon the discussion, thanked the meeting for the manner in which his paper had been received, and he had not much to add upon the discussion. He should mention that, in a paper like this, he had brought forward much more in the way of showing by illustrations than he could describe to them in detail; but he had published a work on the subject, in which he had more carefully gone into the whole matter. In the limits of a short paper it was of course impossible to go thoroughly through every part of the subject. Mr. Nash had referred to the geometrical part of the question. He had already read a paper there on the same subject, in which he had explained the geometrical divisions of leaves and flowers, and he was afraid to touch upon that point again for fear of repeating himself. In reply to Mr. White, he would say he had felt in the works of the present day there was not to be found that art-feeling which they could trace in some of the old works. He could not explain how or why it was. Mr. White said he had answered himself upon this point, but he was not aware of it. While sketching portions of the Norman doorways at Ely he was astonished to see the beauty, feeling, and great expression that was given to the work there—much more than could be seen in modern work. He could not say why they did not get it now; but as far as he was concerned he did not see such work in modern times. With regard to the next point introduced—how far nature should be followed, or to what extent it should be conventionalized, was a difficult point, and it must remain with the artist himself to give his own translation of nature, and develop his own feeling as to the extent of conventional feeling which he would give to his work. But in painted decoration they might have a thing more natural than in sculpture. If they followed nature too literally much of the effect of light and shade was lost. Therefore it was essential to treat nature in a broader manner, so as to get the necessary effect of light and shade in sculpture. He diiffered from Mr. Morris, and considered that work ought to a certain extent to be of a scene painting character, namely, to gain effect according to the position in which the work was placed. Let it be effective from the distance at which it was to be seen, and too much work should not be put into it lest the effect should be destroyed. He referred to the difference between Roman and Greek foliage. The Greeks always kept it simple in modelling, while the Romans cut up the foliage in such deep lines that they lost the form of the leaf itself. The shadow was as strong on the leaf as it was on the ground. This should not be the case. As to the art-workman, he begged to say he thought he was very necessary, and they had not up to the present time ever met with such a one as they ought to have. He decidedly agreed with Mr. Burges that they might make a drawing as perfect as possible; they might satisfy themselves and others; but when it was carved or worked from it was all a downward process. If they made the drawing ever so good they wanted the executant to work *up* from it, and not *down* from it. [Mr. Digby Wyatt, Where the drawing was bad the art-workman improved; where it was good he came down below it.] Mr. Colling added, As to the scale at which nature should be represented, as touched upon by the President, he would say he entirely agreed with M. Viollet-le-Duc in his ably written article 'La Flore,' in his 'Dictionnaire Raisonné de l'Architecture,' in which he said all sculptured decoration in mediæval time was taken from the smallest plants in nature, which were increased to a scale that suited the purpose of the artist, and in large vegetable forms they never found the beauty which was met with in the small species. That was why he referred so much to magnifying objects. It was a wonderful fact in nature, that the more minute it was the more beautiful, and the larger it was the more common-place it appeared.

The vote of thanks to Mr. Colling having been carried unanimously, the meeting adjourned.

Highnam Court
Gloucester
Jan 20/66

Messrs. Day

I beg to thank you for the 12 copies of the paper I read at the Institute of Brit: Archts: and your explanation of the unfortunate confusion in the printing of the 1st set of 12 wh: you sent me.

Yrs: respectfully
T. Gambier Parry

ON PAINTING IN CONNECTION WITH ARCHITECTURE.

BY T. GAMBIER PARRY, Honorary Member.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, December 18th, 1865.

UNDER the title of this paper I must not now attempt to address you on the many methods and styles of architectural decoration. That would require rather a course of lectures than one such as this. My subject is essentially that of painting allied to architecture. This subject must soon receive a deeper attention from the leading artists of the day, and members of your Institute. A few years ago it was all but ignored.

Colour as an element in architectural effect is, in public estimation, a novelty. The taste of the last generation was educated in a purism which kept the arts estranged. The poetry of language was indeed allowed the aid of song and harmonies,—but the poetry of form was disallowed all aid from the music of fair colours. The painter, the sculptor, and the architect knew little or nothing of each other's arts. The idea of modulating them into one great stream was hardly dreamt of; and they cared for each other as little as they knew. The public cared for none of those things; and the few who were spared from politics, commerce or fighting, received as gospel the common art tradition of their day that colour was the province of pictures, and that sculpture and architecture were sacred alone to the ideal of abstract form. This was the art religion of the day; all else was sacrilege. There was much truth in it,—so much so, indeed, that with all our emancipation and liberty of conscience in matters of art, we must acknowledge that there is very much to reverence and admire in a school even of such limited knowledge. Its foundation lay in an idea of purity, in a recognition of the excellence of abstract beauty, and in that modesty of art which is implied by singleness of purpose. The very fact of that straining at an ideal so pure was admirable. It was the recognition of the danger of defilement by any element of sensuousness. I fear that our emancipated school of thought in matters of art is too proudly independent. Freedom in art, no less than freedom in politics, needs discipline to make it safe.

The employment of colour in architecture in the times of its greatest perfection is now too generally admitted to need proof or argument. The beauty of nude and colourless forms may be, and often is, very great. But they need to be of the highest art to bear the trial of such nude exposure. Such beauty, the nude beauty of uncoloured architecture, is certainly of the most pure and abstract kind. Architecture is an intellectual creation. It may delight, attract and awe the multitude, and no doubt it does; but I doubt the power of the multitude to penetrate the depth of its poetry. It is too artificial, too abstract, too exclusive of all that is common to external nature to command all hearts. There is a note wanting in its scale. One touch might bring all the refinement of its calculated symmetry into a closer harmony with nature;—one touch might bring the abstractions of human *mind* into closer harmony with the *feelings of human nature*,—one touch alone; and that is the touch of colour.

A thing of colour is a thing of life. A colourless thing in nature, if there be one, savours more of death than life. In art a colourless thing is but a passionless abstraction. It may be, in both, pure and lovely, even though the idea of life may have no part with it. But as life is better than death, so are things which suggest it; and so it results that as nature without colour is inconceivable, so art without colour is incomplete.

How then shall we apply this deduction to architecture? If the composition of its forms have little or no precedent in nature, whence are the principles of its colour to be drawn? I grant the difficulty, particularly at this time, when people's eyes are so habituated to the poetry of puritan whitewash or to purist nudity, that colour comes upon them as a separate idea, clashing with that of form. I am not surprised at it. It is often less their fault than that of the artists. Incompetent persons are entrusted with an art, of the delicacy and difficulty of which they have no more idea than their employers. There are few more difficult problems in art than the combination of painting with sculpture and architecture. The result is often most unsatisfactory, and neither artist nor employer know why; and until the province, not merely of each art, but of each branch of it, be clearly recognised both by artists and their patrons, there can be no hope of rescue from that confusion of ideas which now make any harmonious combination of those arts impossible.

From the earliest times to our own there appear to have been three distinct methods of architectural painting in common use. Fresco, encaustic and tempera. There were many modifications of each. Their history is of great practical value to us. The earliest method was that of tempera,—the fixing of colour pigment to a surface by some retentive and protective medium. Size was the oldest and commonest—as used from the days of the Egyptians to our own. Wax, too, appears to have been used by them as a medium in tempera. It becomes a water colour medium by admixture with egg or alkali. It is, however, of little moment to us, except for its archæological interest, what was used in such a climate as Egypt.

In Greece and Italy, the method most valued for its durability was the encaustic. It was very variously used—so much so, that that word came to be employed in any method in which wax formed the principal ingredient. Wax was in all probability the earliest protective vehicle used for colours in the architectural painting of the Greeks. Their earliest temples were of wood, and so too were their statues. It is hard to believe that the maritime Greeks, whose principal emporium was Egypt, could have remained uninfluenced by what they saw there, where every work of art or ingenuity was rich with natural or artificial colours. As they preserved and painted their wooden ships, so would they preserve and paint their wooden temples. The tradition that they did so is recorded by Vitruvius, who states that the Greeks covered the ends of beams or roof timbers exposed to the weather with blue wax. The exceeding softness of the effect of colour used with a wax medium, was just what the Greeks desired. It was used in various ways, with a brush, with a spatula, with the encaustic process, and without it. Wax was also the main ingredient in the circumlitio of statues. The statue-painters were known as *εγκαυσται*, *i. e.*, artists who used wax. The advantages of its use on marble, whether of architecture or of sculpture, with or without the addition of colour, were its permanence and transparency, and its resistance of amospheric influences. Examples of painted surfaces from the Theseum, the Propylœa, and the Pinacotheca at Athens, were not long ago submitted to analysis by Mr. Farraday, in England, and to a French chemist, M. Landerer, and in almost every case wax was discovered by them as the medium of the colours. It was also the favourite medium for moveable pictures. A mode of its use is illustrated in a small painting found at Pompeii, where an artist is represented mixing his colours on a stone slab with a fire burning beneath it. It appears to have been the medium most common in use for architectural decoration by the Romans as well as by the Greeks; and it was used for all sorts of artistic purposes throughout the middle ages. Wax is prescribed among the recipes of the Lucca MS. in the eighth century, and in the MS. of Eraclius of the eleventh or twelfth centuries. In the French MS. of Pierre de St. Audemar it is prescribed as a varnish to protect vermilion from the damp and air. And throughout the old documents of English works of art connected with painted architecture, it is mentioned as an ingredient commonly supplied to painters.

In mediæval art, the encaustic system of burning in the wax does not appear to have been used north of the Alps. Wax is prescribed in the French MS. of La Begue, in the fifteenth century, to be mixed with white lead as a ground for painting; and otherwise used also with size and mastic. The receipt of an English artist of the fourteenth century was found not long ago at Rochester, describing its use, when melted with resins and other materials.

I am strongly convinced by the universal opinion of artists employed in architectural painting, from the early days of Greek art to those of the later middle ages in Europe, that wax was the most highly valued ingredient in their hands. It was commonly used by them as a ground for their work, a medium for their colours, and a varnish for protection against damp and air. It has also the invaluable qualities of durability in itself, permanancy of colour, transparency, and freedom from any chemical action on the most delicate mineral or vegetable colours.

The other two methods used in wall painting were tempera and fresco. The controversy about buon fresco and fresco secco, used by the great Greek artists, is of no great practical consequence to us. There is no doubt that buon fresco was used by them; the question being only how far that system was used in the *higher branches* of art. The argument inclines to a peculiar method between the real fresco and the secco. Fresco secco is this,—the fresh plaster is allowed to set, and thus far only to be secco—the wall is wetted for use, and the colours used with lime for white, and lime water for a vehicle—whereas the method used by the Greeks and Romans of classic days appears to have been this, viz., to lay upon a secco wall (*i. e.*, where the plaster had set) a fresh wash of lime, into or upon which, before it set, the artist painted *ad libitum.*

The methods commonly used in England were of various kind of tempera. Real fresco does not appear to have been practised in England. There is no evidence of its use in the Christian art much before the time of Cennini. It was probably first used at Pisa, in the early part of the fourteenth century. The serious objection to fresco of any sort, is, of course, the very limited number of colours which will bear the action of lime. Its excellence is in the mellowness of its effects, and freedom from a glossy surface, a quality absolutely necessary for mural painting. But its surface, unprotected by any varnish, or coating of any sort—its colours held in their places only by the crystalising of the lime water—its porous, or at least granulated surface, on which damp and minute fungus find an easy lodgment, disqualify it from being trusted where walls are constantly exposed to an alternation of damp atmosphere and hot multitudes.

Tempera painting has many modes of work. Oil is found in some of its recipes. Oil appears to have been of very ancient use. A Greek writer, in the time of the Emperor Augustus, describes the preparation and the use of drying oils. The monk Eraclius mentions its use in architectural decoration of the eleventh or twelfth century thus: "If you wish to paint a column or a stone, take white lead and grind it with oil." He then describes the thin film of gesso or cement with which all finished architecture was covered, and adds: "You may then paint upon it in colours mixed with oil." As he was the compiler of old Greek art traditions, we may suppose him thus giving an account of oil painting used by Byzantine artists, and even by those of still greater antiquity. But oil is a very bad vehicle for architectural painting where it cannot be protected by a varnish on account of the gloss.

But I must not weary you with the details of technicality and materials.

Art owes a greater debt to whitewash than it might like at first to avow. Whitewash preserved the portrait of Dante to Italy, and the records of much ancient art to England. The Puritans' whitewash was as good as a museum for the works it protected. But those works are now rapidly disappearing under the improving influences of restoration committees. It is difficult to detect the actual culprit of this ruthless destruction, because the builder employed in repairs shields himself behind the stupid ignorance of his men, the architect shelters himself behind the stupidity of the builder, and the ladies and gentlemen of the subscription list smile safely under the ægis of limited liability. There has been a revolution of public taste. It has now gone from one bad thing to another; from whitewash to bare walls. Public taste began to wake to a sense of its own impurity—and then rushed into immoderate use of soap and water. The indiscriminate destruction of early works of English art has been grievous. Much was bad, no doubt: but the good has gone with it, and, what is worse, the record of their composition, the incidents of their history, and the expression of their poetry are gone also. There are, however, scraps enough left to form for us the alphabet of restoration. No geological catastrophy ever denuded a continent more completely than the flood of modern Purism, under the lying name of Restoration, has laid bare the architecture of our ancestors. They have bared its very bones. No martyr was ever more effectually flayed. The finer taste of other days had covered the hideous mortar joints and rough masonry of the interior of buildings with a film of fine cement or gesso. But this has all been scraped away under the unhappy ignorance that this too was merely whitewash. The exteriors had been left rough by the builders, all fitly and rightly enough, to suit the action of rough times and rough climates—but the interiors were to meet only the gentler action of men's thoughts and men's prayers. Roughness and refinement are both elements of sublimity in art, but they can never change places. What would give masculine grandeur to an exterior would mar all good effects within. The last touch given to the interior was to soften down the asperities of the rough materials. Coarse lines and broken joints of mortar confounded the finer forms of architecture. A thin film of fine cement resolved those discords and prepared the way for the colourist. But now-a-days colour, whitewash, gesso and all are gone. Architecture, first washed of its dirt, then deprived of its complexion, and, last of all, denuded of its very skin, is presented to us in a state of nudity, which we are then called on to admire! This ruthless process, besides its effect on countless minor buildings, has reduced the interiors even of some cathedrals to a condition of bare masonry and vaulting, comparable only to that of a common beer cellar—and, among others, has given the two grand shafts, which rise from the floor to the vaulting of the choir of Ely, the appearance of two huge piles of double Gloucester cheeses. These are but illustrations: they are, alas, too common.

That colour had its place in architectural effect, and that it was necessary to its perfection, has been a principle recognised in all times and countries, irrespective of climates, or even of conditions of civilization. I by no means insist that this should bind us to its adoption. The intelligence of one generation need never be a slave to that of another. But the fact of art having been unanimous in its greatest and purest age, whether of Pagan or of Christian times, on this subject, is a sufficient reason for our enquiry whether our preference for uncoloured objects is a purer taste, as some people are apt to arrogate to themselves, or whether it be not, as I believe it to be, a simple deficiency of perceptive powers, and the evidence of an elementary, incohate and limited taste.

In the greatest days of classic and christian art, sculpture, as well as architecture, was coloured. In other words, the same spirit imbued those arts. The interiors of public buildings appear to have been most richly decorated. The fine sense of the Greek revolted against the blots of dead white with which uncoloured sculpture would have marred the unity of his architectural effects.

The objections urged by many persons against coloured sculpture appear to me to arise from two causes. One, and perhaps the main one, is this: that while possessed of a full amount of ocular perception of colours, and even a great love for them, they fail in their intellectual appreciation as things or qualities of purest poetry and great significance. Colour associated with form, to use their own words, interferes with the purity of abstract idea. It distracts their mind. They are imbued with a feeling of its sensuousness. They lay down, as a theory, that sculpture has one, and only one, element of excellence, the beauty of abstract form. It has indeed that element of perfection—but that is no argument that abstract form, to be beautiful, must necessarily be *dead white*. They appear to possess the sensuous, and to want the intellectual capacity for colour, and to recognise in it, when combined with any art but that of picture, a quality inimical to the purity of idea. Is nature, then, so entire a type of sensuousness? Are flowers and shells, and a thousand other things, less pure than pieces of white stone? Have they no abstract beauty of pure form? Pure form is indeed most lovely, under any circumstances. Pure colour is most lovely too. In their combination two purities cannot produce impurity—but rather they help to make each other perfect.

The other cause of objection seems to me to lie in an exaggerated idea of colour, and in the conception of a realistic, low, material sentiment in its use, which is indeed the very opposite of what its advocates maintain. Colour in art is to make the beauty of all objects still more beautiful. It would not make them more beautiful if it made them less pure. Abstract beauty of form may be as great in any object, whether it be of one colour or of many. Colour rightly, purely, used, will never be a mockery. It will never be sufferable in pure art to use colour to make an object appear to be other than what it is. The quality of abstract beauty is the highest excellence of the highest art. It may be that statues have been painted to mimic flesh; but that moment pure colour was prostituted by such abuse. But why does a sculptor imitate the softest dimples of the flesh? Why does the modern sculptor prefer marble to all other materials, as in granulation and transparency most like flesh? I do not accuse him of a desire to deceive by those soft dimples or that translucent surface; but I claim for colour an equal freedom from intention to deceive. I claim for it the power to soften the softness of his marble dimples, to mellow the crudeness of his marble imitation of humanity, and to harmonise the surface of his work with the universal rule and use of nature. That is the use of colour purely and rightly employed in sculpture. That was the use of it in its best days. In archaic art, colour may have been violent and even vulgar; in the decline of art it was misused to imitation and voluptuousness. But in the highest days of art, when coloured sculpture was neither chargeable with the vulgarity of violence on the one side, nor the vulgarity of imitation on the other, the untinted statue was singled out for exceptional notice. The Venus of Cnidos is the common illustration of this. But the illustration merely goes to this, that the statue was not painted flesh colour. In the days of Praxiteles no completed work is mentioned with admiration for being left in raw marble. The well known circumlitio, or encaustic wash, was as universal for the softening of the crude marble surface as the varnishing an oil picture is now. Statues painted in mimicry of nature are certainly mentioned by Plato, and admired only as objects of rare ingenuity, not quoted as models of poetic art. But, irrespective of mere imitation, there was certainly no timidity of colouring, nor any squeamish value of mere materials. Wood marble, and bronze were coloured and gilt in the best age of classic art. It has been suggested that the practice of polychrome in sculpture had its origin in the rich draperies with which the archaic wooden figures had been clothed. But it seems to me a degrading estimate of men's artistic sense, in the use of colour, to trace it thus. The great statues of ivory and gold could have had nothing in common with such an origin as that. We cannot tell whence any taste may have been derived; but when a nation, so highly endowed with artistic perceptions as the Greeks, could rarely, if ever, tolerate a colourless thing, whether in sculpture or in architecture, it is an indignity to attribute their use of colour to habit or tradition, or to trace the chryselephantine work of Phideas to the barbarous draperies of archaic gods.

The art of the statue painter was as distinct from all others as that of the landscape painter, or miniature or figure painter, is now. We have the strongest reasons to infer that sculpture, in connexion with architecture, was rarely, if ever, white. The mere encaustic of Punic wax and oil mellowed the crudeness of its tint. The works of the greatest sculptures in various marbles, in bronze, in ebony, in ivory and gold, with painted draperies and golden hair, with parcel gilt ornament and inlaid silver, must induce the belief and warrant the opinion that in those days of art's greatest creative genius, in those days of the intensest perception of the abstract beauty of form in sculpture, colour was recognized as an element of excellence to make that beauty perfect.

In the painted architecture of Christendom, sculpture was not, as in classic art, a principal, but an accessory. In Gothic work, therefore, statue painting, although often most refined in colour and in ornament, seldom rose above the art of architectural decoration.

The polychrome of the ancients was as contemporaneous with the architecture as the circumstances of each case allowed. The uncoloured temple or public building was mentioned as being as exceptional as the uncoloured statue. A well known case is that of the Prytaneum and the Agora of Syphnos, which Herodotus mentions as white-fronted, in a manner implying their newness and unfinished condition at a critical juncture of their history.

We have reasons to infer by the descriptions of ancient writers, and to know by existing examples, that the polychrome of sculpture was supported not only by the rich colours of the interior walls, but also by furniture of marble and inlaid metals, ornaments and vases of terra cotta, inlaid pictures and mosaics, and more richly still with the costly beauties of rich embroidery. There was no cowardice, no quakerism of so called "quiet" colouring in those days. Imagine what such a statue as that of the Minerva of the Parthenon, or still more the Jupiter of Olympia, would have appeared with its many coloured materials, with ivory for its flesh, and that too probably enhanced, as the ancient fashion was, with encaustic tinting, with gold for its enrichment, and its drapery diapered in painted colours of fruit and flowers; imagine such a figure, perfected by all that art could concentrate upon a single idea, by form and colour, ideality and realism of the highest and rarest, seated in a modern public hall, of which, as is most common, the colours of its walls alternate with tints of putty and of mud, picked out with a modest dilution of raspberry cream. But I am not to be supposed to be advocating violence of colour because I advocate power in its use.

In such magnificent beauty as in the works of Phidias, in their full glory of polychrome, natural and artificial, we do not hear regrets of the great sculptor himself, or complaints of his contemporaries, that colour interfered with the beauty of their form. In their days was realised that power of artistic combination by which colour could be felt as pure and beautiful in art as it was in a rainbow. In those days the grandeur and the beauty of form, as represented by the highest ideal of architecture and of sculpture, could be and was recognised no more in the Venus of Cnidos than in the Minerva of the Parthenon; no more in the white shafts and cornices of Syphnos than in the coloured glories of Athens, Elis, and Ægina. No, in those days, to which we turn with reverence for the classic education of art as for the classic education of its literature, we hear nothing of that bald idea, which seems to me to imply either poverty of sense or poverty of imagination, that the ideal of the purity of abstract form is marred if it be clothed in colour. The ideal of form is indeed most pure and lovely; but I am convinced that, as in ancient days, so too in our own, a larger hearted, and not less pure minded perception of its excellence will find no hindrance in its association with the excellency of ideal colour, but rather will love the loveliness of colour which only makes the ideal form more lovely still, as it has nature for its universal guide, and human sympathies for its universal exponent.

If ever there were a science, if ever an art of which the whole sentiment was expressed in that of the ideal of abstract beauty, it is architecture. In its every feature it is a human invention. Its forms, indeed, are consonant with those of natural beauty—its powers are in conformity with those of natural laws—but in its own completeness it is a pure and original conception of beauty which is nowhere found in the realms of nature. It exists only as the embodiment of a great and beautiful idea.

The excellency of all fine art lies in its ideality. Sculpture inclines to arrogate to itself too exclusively the highest ideal of form in its purely abstract sense—but most beautiful, most inexhaustible as its resources are, it must rely for the power of its effects, not so much on abstract beauty, of which the world in general can rarely realise the idea, but on human reality, human sympathy, embodied in the beauty of human form, which it is the province of sculpture to accentuate and express. For abstract beauty, therefore, architecture stands the first. To amplify the ideal of its beauty it has long since modulated all other arts within itself, the arts of form, of colour and design, the arts of technic mechanism, and æsthetic poetry.

A serious question in the revival of architectural painting is the revival of its ancient styles.

The argument that such revival would be only retrogression must, in consistency, forbid recurrence to the very styles of architecture itself, no less than to the styles of its decoration.

If progress is to be based on the step last gained, the genius of our arts must take wing from the tower of the Crystal Palace, or the floor of last year's Exhibition. I find no fault with the Palace or the Exhibition, but I see no hope for the architectural art of the future but in the revival of all that excellence of the arts of past times, which, from whatever cause it may be, has been allowed to die,—revival, I say, not of mere copyism, not of undiscriminating repetition, not such as some mere sentiment would suggest, or some limited favoritism would dote upon—but, with the larger hearted purpose, to find a base from which our arts might rise, with the firm footing of definite principle.

I believe that we do find such definite principle in the arts of past times. Our arts, on the contrary, are now a very republic of antagonisms. They have thereby lost dignity through self-contradiction. It is in the spirit of discipline that any great school of art can have its spring. Men may differ in opinion, for we have but little contemporaneous record, how great schools of art have arisen. But, whether it was by accident, by intuition or by principle, I care not now to argue, but the result was most assuredly this, that in the earlier styles, both classic and christian, is found the production of magnificence in architectural effect by the union of arts, which was lost by the development of their independence.

It is to such a disciplined union as that, that the architecture of the future had best rely.

A definite style, no matter of what age, was the expression of a definite idea; that style was perfected by the union of many arts. The more perfect their union, the more perfect the expression of that idea. Destroy that union, and you destroy the very means of its expression. The whole charm of style lay in the purity and clearness of its voice. The charm of all styles lay in their clear expression of individual character. It is to indifference or to want of power to recognise this, that the failure of so much in modern art is attributable. The trumpet gives an uncertain sound, and all its music is gone.

If, then, I argue for a revival of ancient systems in their completeness, Pagan or Christian, Classic or Gothic, it is in no spirit of sacrifice to mere antiquarian technicality. But indeed far otherwise. I believe that the genius of original invention will thus have increasing scope and increasing resources. We find in the styles of other days so many modes for the expression of human sentiments.

The catena of styles is the golden chain of human sympathies.

There is a sacredness in their history, and a sacredness in their associations. These are no trifling qualities which make them worthy of our adoption. I argue, therefore, that in our dealings with the works of our predecessors we have a definite duty to them no less than to ourselves. Style must not be in bondage to technicality. In adopting any style it is the spirit of it rather than the letter for us to master. And if art be eternal, as I believe it to be, those styles of the Pagan and of the Christian world may still be used in their separate and complete entirety to let loose and to embody our thoughts—for they were OUR fellow men who first conceived them, and we are THEIR fellow men who need to use them, in a communion of reverence for those who have gone before, and in a communion of interest in those who are to follow us.

When the painter and the architect first worked together the spirit of the age which brought their arts into life and action inspired them alike. It has been common among art-critics to regard rather with a compassionate admiration that union of spirit which kept those arts in harmony. In the account taken of Pagan and Christian arts, that period is regarded as that of their weakness or their infancy. The full dignity of manhood has been accorded to them only when they had arrived at a direct and positive antagonism—when, for instance, painting worked for its own glorification—when it took a space assigned to it by the architect, and turned that space into a lie,—when it turned the surface of strong walls into scenes of atmospheric perspective, or a cupola into a region of clouds. I urge that this was and is a miserable abuse of art—I believe that this abuse lies in a misappreciation of the vastness and elasticity of art. It comes of conceit, and the self glorification of one art in abnegation of the purposes of another. I speak not now of painting merely for its decorative effects, but of the highest sphere of that art, its historic, sacred and poetic expression in alliance with architectural design. I must express regret at the paucity of ideas, not only in our own day, but even in the greatest days of artist life by which one exclusive phase of the painter's art has been recognised as perfect,—that of pictorial effect. I believe the greatness of that art rather to consist in the greatness of its adaptability—in its power to respond to the most opposite demands. But now it is restricted to one only phase—that one only is supposed compatible or proper to its highest aims—that whether that grand art be applied within the limits of a gold frame, or be spread over some great surface, needed for the repose and grandeur of architectural effect, yet still that the same ever repeated phase of "*picture*" should prevail. It is strange that artists should not see the excessive weakness of this poor restriction of their art—that whether it be applied to a picture in a boudoir, to the bulging side of a jug, to the bottom of a dish, or to the great wall spaces of architectural design, their grand art should manifest such poverty of invention, such wretched weakness of resource, that under conditions so opposite it should still remain the same.

But the modern painter has made himself a slave to the technicalities of perspective. The greatness of his art lies in *design*, not in the mere technicalities of linear or atmospheric relief. But art was in this way narrowed centuries ago, even by those who in its great days glorified it by their genius—but they were intent on one ideal of it alone—so they dammed up its stream and made its channel narrow. Painting was reduced to pictorial effect. Arts once glorious in their diversity were all drawn in, within one narrow code of academic rules. The altar-piece, the window and the wall (as I have said elsewhere) were all brought within the category of the same rigid table of art laws. Glass, pottery, walls, pictures, mosaics, were all to be treated alike—and why? because the artists were in bondage.

Academics had ignored the varying conditions of art in its place, its purpose and its materials; and popular opinion, lending its nose to the hook of academic pretension, had frightened the artist into compliance, for his health, his peace and his pocket, but not for his conscience sake.

To the honour of English art there have been two great spirits who broke loose from the track of common place, and asserted in practice the true theory of design, both in decorative and in the highest order of illustrative art—that design is best which is best fitted to its place, its purpose, and its material. Their names will ever be sacred in the annals of English art—I mean those of Wedgwood and of Flaxman.

In the history of architectural art as written in the remnants of its monuments, we find most interesting illustrations of its union with that of painting. We find that everywhere when these arts have combined without mutual injury, a system (even if it be not dignified as a principle, which I believe it to have been)—a system was ever most implicitly followed. I say—whenever those arts were combined without mutual injury. In Egypt, in Greece, in the classic South, and in the Gothic North of

Europe this system prevailed. It may be that in those days of the accord of arts, the technicality of the painters was not equal to their feeling—that their heart was beyond their art. It may be that such men as Polygnotus and Panœnus at Athens, contemporary with Ictinus and Phideas, or the Gothic painters in France and England, contemporary with our Edward the Third, may have been surpassed in the technicalities of design and of relief by those who followed them; but, be this as it may, they worked with architecture without stultifying it.

Their accomplished followers ignored the art with which they pretended to work, and used the forms and mouldings of architecture as mere picture frames.

The walls of Egypt and Pompeii, the traditions of Greek art preserved by Pliny and Pausanias, the vases and the tombs of Etruria, the paintings of the catacombs, the mosaics of early christian art, and the frescos and other wall paintings of its development, present to us a system and a sense of art in one continuous stream of common feeling—painting allied to architecture in harmony and completeness. Painting is an art of exceedingly wide range—from the bold symbolic outlines of an Egyptian hierograph to the niggling mimicry of a Dutch picture—and wide in the purposes it is capable of fulfilling—such as for walls or pottery, for pictures or enamels, for sculpture, architecture, glass or tapestry. This versatility needs to be realised before its use can be mastered, or its criticism worthy of regard. I am advocating no necessary return to archaism—certainly no return to any imperfect type—and less still to any abnegation of our own knowledge and art-powers, whatever they may be. But I certainly do advocate the study of painting in a far wider sense of its powers than is commonly found among us now. I look to it to harmonise itself with whatever it may be associated, whatever be its style—I look to that union of the arts rather as their espousal than their vassalage. If in architectural painting the art were denied some of its common resources, it would be but to draw out and elevate the rest. Design need lose nothing of dramatic expression—figures need lose nothing of their vigour; art would rather gain by it than lose. Pictorial effects and accessories are only too often the means of escape from some crucial difficulty of composition. But where these find no place, and all resource for artistic indolence, or cover for inability is cut away, a painter is put upon his mettle—his design must be more matured, his composition more studied, and his work thus necessarily raised to a higher standard. It would be no ill day for our arts, if there were anything thus pressing upon them to force them upward.

People err in taste because they ignore the proper base of criticism. They are confounded by the flood of heterogeneous forms which disgrace the character of modern art; and no wonder; but once seize the guiding star of all judgment—once realise the condition in which a work is placed, conditions as to itself, conditions as to its place, purpose and materials, and then all is clear. No matter how much consecrated by long use or common associations, it must be condemned if its conditions be unfulfilled.

But to conclude—Monumental art is of all others the highest in its aim. Its condition of success is that the resources of all arts be brought into unison. The success of former ages is the result of that unison, in which the whole chorus of the arts joined. It is the modern self assertion of the individual that renders success in monumental art well nigh impossible. Let each art be free as air, and revel in its own powers when it is alone and uncontrolled; but then, and only then.

The painter's triumph may be complete. Let him paint as the spirit moves him, and do all that natural scene, or historic incident can inspire. But then, associate his art in full swing of its liberty with the calmer dignity of architectural design, and the result is this—both mind and eye are offended, he has made all light which the architect had purposely left massive, bold and broad; he has placed the two arts in direct antagonism, he has stultified the architecture, and reversed every condition of its equilibrium, opening that which should be closed, lightening that which should be heavy, leaving weighty masses of masonry without apparent support. He has turned heavy walls into thin air, and has left massive arches to carry the clouds.

But the great works of other times have given us the precedents and principles to attain results of success similar to their own. Surely it will not be denied that if ever taste culminated to its highest act, it was in the creation of beautiful works. If ever there was authority in taste which we are bound to reverence, it was when art had attained its greatest triumphs. Individual taste may now-a-days rebel, in vanity and self assertion, but great artists of the greatest days did otherwise. I am confident that in conjunction with architecture all arts are raised at once to their highest sphere. Architecture is the most conventional of all arts, the creature of thought most abstract and refined; and with it others can find companionship complete and sympathetic only in their purest and noblest character, where all power is concentrated to symbolise and suggest rather than to realise, to address imagination rather to satisfy curiosity. Naturalism and imitation are other distinct and inferior phases both of sculpture and painting—phases indeed to which a good pupil must attain—to which the master must have himself in his pupilage attained, to reach his higher standing ground. They are steps, mere steps, which all must mount who care to feel the pure air above, and to see the broad horizon of art's poetry in all its beauty.

I conclude therefore with this—that if those various arts of which my subject has treated could be attained, and their spirit guided by the genius of one master mind—if their full powers could be compelled, and their resources welded together with unity of purpose and unity of result; such a conclave of the arts could *only* meet for one great triumph—in an architecture completely beautiful—the mother and the mistress of them all.

Mr. JAMES FERGUSSON, Fellow, (responding to the President's invitation), said he should be most happy to move a vote of thanks to Mr. Gambier Parry, for he had never listened to a lecture in that room with more pleasure; but he felt unable to add a word to what had fallen from that gentleman. He agreed with almost all he had said, and if he fancied he differed in some small respect from some of his remarks, he felt he was not justified in expressing his views without seriously thinking over those points. Mr. Gambier Parry had said so much that was beautiful, original, and good, that he (Mr. Fergusson) must be content with moving a vote of thanks, and saying no more for the present.

PROFESSOR DONALDSON, Past President, begged to second the vote of thanks which had been moved by his friend Mr. Fergusson. He owned that he heard with pleasure a voice in those rooms reaffirming the principle which was advocated twenty years ago,—that polychromy, as an art, was one of the elements of nobility in architecture; that colouring of sculpture was legitimate and prevailed to a great degree among the ancients: in fact, that it was applied to every object that formed part of the composition of Greek buildings, whether temples, palaces, or private houses. There was one observation amongst others in the able paper of Mr. Gambier Parry which he did not apprehend fully, and he would be glad if that gentleman would do him the favour of explaining precisely what he meant by the remark that when colour was applied to statues it was not applied to imitate the flesh. It appeared to him that if colour were to be applied to a statue it was for the imitation of flesh, because it was done for the purpose of presenting to the eye the object which was intended to be represented in its greatest fulness of expression and sentiment; and he believed statues, with certain reserve, coloured and painted to imitate flesh, would have much greater effect upon the mind of the beholder than the severe white marble. He agreed entirely with his friend Mr. Gibson, the eminent sculptor, who introduced colour, to a limited extent, however, in his statues. He had reproached him that he did not go far enough with it.

When the eyes of a figure were coloured, and a little gold was put here, and a little tinting there, it was not carrying out polychromy as the ancients did. To give full development of harmony, in all its power, it was necessary that the whole statue should be coloured, so that one part might be in perfect accord with the rest. It was in no captious spirit, but in order to show Mr. Gambier Parry that he had not been an inattentive listener to his learned discourse, that he ventured to submit to him this question, and he should be glad to hear from him whether he rightly understood him to state, that the objection to colouring of statues was, that it would be too sensuous if it represented actually the flesh?

Mr. M. DIGBY WYATT, Fellow, remarked that when a gentleman of Mr. Fergusson's position and attainments had shown his disinclination to enter upon this difficult subject by the very short compass in which he had proposed the vote of thanks for so eloquent a discourse, he (Mr. Digby Wyatt) felt it was very like presumption on his part to enlarge upon the theme; but as discussions amongst them ought to be frankly sustained; and as it might be expected that those who, like himself, had thought much on this subject should give an indication of the conclusions to which their thoughts had tended, whether agreeing with, or differing from those of the lecturer, he might be justified in saying a very few words. He, for instance, had felt strongly that one important term which Mr. Gambier Parry had used throughout his admirable address pointed not only to what should be an essential characteristic of all producers of perfection of colour, but to the mainspring of all those conventions and imitations in art which must unite with colour to occasion truly harmonious results. That term was "discipline." The undisciplined artist broke out in exaggeration and vulgarity as the undisciplined picture invariably failed in harmony, keeping, and repose. It was necessary for every true painter to subdue himself, modulating his designs to the special conditions of alliance under which he might have to work, and in the application of his art to architecture to content himself with fusing, as it were, his own individuality in the general result aimed at, to the abandonment of all turbulent self-assertion. Before any perfect result of union in the arts could be obtained, it was necessary that men should study to that special end: they must no less clearly recognise what they must subdue in themselves, than what they must yield the place of honour to in others. In the attempt to revive historical styles, in which painting and architecture had been successfully associated, the student who worked at the reproduction of the material form in which the best ancient masters had worked would of course go astray. When results in revival were successful, it was almost always the case that those by whom they were produced had followed, not in imitation, but by analogy. It was, he thought, by observing the points which seemed antagonistic in various styles, rather than those which appeared to be in accord, that the students would arrive at the true essence of each, and so create for himself, as it were, the atmosphere in which he would best succeed. For instance, any one who laid himself out specially for the observance of the harmonies incident to mediæval design at various periods, with a view to their successful reproduction under altered conditions, either of time or place, would in such case acquire great additional mastery over the grammar of form characteristic of those periods, if he closely investigated the conditions under which effects of beauty, or the reverse, had been achieved by apparently contrasting or relatively antagonistic means in classical architecture, and the styles deriving therefrom. He should certainly observe by what means successful results were obtained in most, if not all, styles, and how respectively the Greek or Goth of old would have produced the effect at which he might find himself aiming. Real success was best ensured, not by opposing, ignoring, or servilely reproducing styles of the past, but by concealing or avoiding carefully all their deficiencies, and adding features consonant with every modern requirement Speaking for the moment hastily as to the history of art, and without noting rare exceptions, it appeared to him that the painter had in his own branch gone widely astray the moment he had separated himself from the architect. So long as the architects provided, and the painters worked upon, walls and other mural surfaces, and worked together, they were both mainly successful; but as soon as they separated they both went astray; because the painter lost the habit of working in that grand style, and on that large scale of dramatic simplicity which architecture demanded; while the architect lost the aid of a previously all-essential auxiliary. In easel pictures painting too often degenerated into mere furniture; and had done so from the days of Raffaelle even to the present time. It was curious to notice the different tendency in the performances of the contemporaries and immediate followers of that great master of the union of the arts. His master Perugino, and the senior pupil in Perugino's studio, Pinturicchio, were accomplished masters in mural painting, and from them no doubt Raffaelle had learnt, both at Perugia and Sienna, to wed painting to architecture after the mingled traditions of the Gothic or Giottesque school, and those of the classical or Paduan. Among Raffaelle's scholars the strangest contrasts presented themselves; none, for instance, could be greater than between Giulio Romano, that father of sensual mischief, and the tender-thoughted Perino del Vaga. They both worked almost from the same cradle, yet one burst into self-assertion, and the other laboured all his life in ascertaining the conditions to which all his numerous designs for decoration had to be applied, and in cultivating his talents those steps of moderation and self-discipline by which harmony was alone to be obtained. The recollection of the characteristics of many of the elegant designs made for the Dorias and others by Perino del Vaga brought to Mr. Wyatt's mind another illustrious name which Mr. Gambier Parry had excluded from the society of that illustrious pair of British worthies to which he had alluded. To the names of Wedgwood and Flaxman might, he thought, be added with propriety that of Stothard. The last named and Flaxman thoroughly apprehended the laws of beauty with relation to the practice of decoration and the principles of composition applicable to all the media through which art could find its way most readily to the hearts of the people; and it was a great thing for England to have had men, at a time when most others were either ignorant of, or indifferent to the value of the past in art (especially in mediæval art), so keenly alive to the beauties which ancient mural decorations, in this country, as well as in Italy, no doubt did once manifest. But few examples of such ancient decorative art were left in this country for the student to admire. In the Chapel of St. Stephen, Westminster, at Chichester, Salisbury, Canterbury, Durham, Ely, Norwich, &c., a few fragments might still be traced, but unfortunately they gave but little indication of what ancient painting in England had been. Still, in the pages of the illuminators they had clear evidence that the English painter was an accomplished artist at least during the thirteenth and fourteenth centuries. Though many ancient works of art had been ruthlessly covered over and destroyed, sufficient had been brought to light and preserved to vindicate his claim to a distinguished position in the art of applying colour to architecture; and Mr. Wyatt hoped on some future day that his position in that respect historically might be vindicated to a greater extent by some such able master of the subject as Mr. Gambier Parry had proved himself. Mr. Wyatt certainly felt obliged to that gentleman for the admirable liberality with which he had treated his subject that evening. He could not but feel, that for one who had devoted himself mainly to the study of mediæval art, and who, by beautiful design and great hand dexterity in the production of works of mural painting on the grandest scale, had manifested his command over the principles and practice of that special phase of painting, to express himself with the catholicity and justice which had marked all that Mr. Gambier Parry had laid down for them that evening, was truly admirable.

Professor Kerr, Fellow, wished to express his admiration of the graceful and gentlemanly manner in which Mr. Gambier Parry had addressed his observations to the Institute. He regarded him as what might be called a model amateur, for he came before them as one who was himself an artist, who devoted himself personally to art-labour, and he confined himself strictly to that art to which he belonged. At the same time one might perhaps venture, if not to differ from him in some of his doctrines, at least to raise the question of his differing from public opinion upon those points. Mr. Gambier Parry seemed to hold the doctrine that sculpture ought as a fundamental rule to be painted. That this doctrine was supported in some degree by the works of the great masters of the early Greeks may be acknowledged; but he (Professor Kerr) must still confess himself to be one of those who could not agree with the painting of sculpture as a rule. He considered that colour, as regarded that particular class of subjects, ought to be confined to the art of painting on the flat; and that directly the artist professed to imitate nature in the solid—directly he departed from the mere delineation of objects in perspective—he went into art of a different type, and ought altogether to surrender colour, so far as representation of nature went. He might suggest further, that there were only two kinds of sculpture as regarded the question of colour,—one which might be coloured in direct imitation of nature, like wax-work, and the other, that which contented itself with the real material in which it was executed, or some equivalent. The highest class of sculpture, in his opinion, must ignore colour altogether, and depend for the exhibition of texture, expression, and sentiment entirely upon the work of the chisel. This, he thought, was the ordinary idea of sculptural art. He might be allowed next to make a suggestion on a practical point. He was much interested in hearing what Mr. Gambier Parry had said with regard to the materials which should be used in fresco-painting. It struck him that the range of fresco-painting might be considerably enlarged—it was a suggestion more theoretical than otherwise—if the use of lime for the surface were modified. It had always appeared to him that for the plaster upon which the painting was to be put, lime ought to be used in the smallest possible proportion. It also appeared to him that sand ought not to be used at all, because it was obviously quite unabsorbent of colour. Then if they used pure lime itself, they used a material which limited the range of colours. But if they would employ the smallest possible proportion of lime mixed with very finely powdered white stone dust, they would have a material not less white than the pure lime and as perfectly absorbent of colour. If Mr. Gambier Parry had not tried this, he would suggest the expediency of his doing so, to see what came of it. The greater the range of colour allowed the better; and he had always thought that if fresco-painting could be brought into some form which would admit of its being used to a greater extent than at present, it was one way in which the country might improve its volume of art very largely.

Mr. John W. Papworth, Fellow, said that, having been twice permitted to read papers upon colour in that room, he might be expected to make some observations upon the lecture of the evening. Excepting points of æsthetical and technical character, with particular views of the history of art, which would require a longer discussion than the end of an evening would allow, and which really did not much influence the principles advocated, he saw that the paper was a field for agreement between the lecturer and himself. Many of the differences of opinion which had existed on the question of the ancient and modern employment of colour might have been caused by meanings given to the word "painting." The careful reasoning which had been exercised in the production of that paper was evidenced in the attempt to divorce *architectural painting* from *pictorial art*: and he hoped that the audience had appreciated the distinction between them made by Mr. Gambier Parry. It was one in which opposite schools of critics could join without shame at having to take so excellent a lesson from the lecture, in which it had been propounded for the first time, or at any rate for the first time with so much power. One of their difficulties had always been to reconcile the demands of *pictorial art* with the claim of architecture (if she were considered to be capable of form and thought) to be freed from alliance with *that* painting which turned her into a mere frame. The evil results of such union were visible in the salons at Versailles; but the practical remedy had not hitherto been suggested. With regard to the application of colour to sculpture, the lecturer seemed to have taken care to avoid any support of an attempt to imitate nature by means of similarity: a care that should be heartily approved by any one who, like he did himself, held that nothing, in painting or in sculpture, which tended to a deceptive reproduction of nature was good. That criticism condemned absolutely the practice of applying colour in architecture by putting local or other natural colours to ornament, as well as the practice of applying colour in sculpture by putting figures, in red coats, with yellow vests and brown breeches, before a background of green trees, blue skies, and white clouds, having a little brown under them to sham their shaded side more completely.

Mr. THOMAS MORRIS, Associate, desired to introduce one word, that had not, as yet, fallen from any speaker; and it was a conciliatory word, since, should opinion happen to vary upon any part of the admirable lecture, it would not, he thought, upon this—every architectural work should possess the quality of *tone*. The architect would deem this quality more essential than colour, for, by its presence only, could his compositions exhibit the harmony of result Mr. Gambier Parry advocated. It was certainly more necessary to the effect of a building, that there should be evenness of tone—a oneness of chromatic purpose, simply fulfilled—than that there should be any positive display of adventitious colour. Still, allowing that to be as it may, and let the windows (the channel and key of internal light) throw tinted rays upon plain surfaces, or pure light upon tinted objects—admitting polychromy, broad shades, and materials with native colour, deep voids and prominent solids—there was yet, amid all this variety, one aim to be constantly promoted, namely, a consistent, prevailing and concordant tone. Here, the architect was really the painter, though working, it may be, with his mind, rather than with the brush.

Mr. WILLIAM WHITE, Fellow, would say one or two words on this subject. Having had occasion to differ from Mr. Digby Wyatt upon another point, to which he should probably refer at some future time, he was the more glad to endorse fully what had just fallen from him with reference to the necessity of system and principle in carrying out architecture in all its branches. For without doubt the elaboration of a proper principle would afford a crutch to the lame, and so far from cramping invention it would furnish wings wherewith the genius might soar. As to what Mr. Gambier Parry had said on the subject of architectural painting in general, he strongly felt that so long as painting was used for the enhancing of form, and bringing out of architectural outline, that was its true aim, but if used as a mere decoration to an architectural form which lacked spirit and character in itself, it must essentially fail; and he was personally very much obliged to Mr. Gambier Parry for having brought that principle so prominently before them. As regarded the painting of sculpture, he would be sorry to anticipate the lecturer's explanation of the point adverted to by Professor Donaldson, but he (Mr. White) understood the proper painting of sculpture to consist simply in the colouring of it, in order to add tone and texture to the sculpture, and to harmonize it with the rest of the work, and not for the sake of making it an imitative or pictorial representation.

Mr. F. C. PENROSE, Fellow, was glad to have the opportunity of tendering his thanks to Mr. Gambier Parry for his very valuable discourse. He had never heard the points which they should all aim at in the union of the arts so clearly put. It was the key for their future progress, if they could only keep to it. At the same time he must remark that the discipline which they had been called upon so earnestly to accept, and which he hoped they would endeavour to put upon themselves, must be impressed upon painters and sculptors also. He feared they would be difficult to treat with, but the task should not be given up on that account. He thought Mr. Papworth had truly stated the difficulty of agreement in the matter of the colouring of sculpture by the ancients; namely, that it proceeded from the want of recognition of the real thing done. If, therefore, we were able to contemplate Phidias' great work in the Parthenon, he felt sure we should all be perfectly satisfied with it, however powerfully coloured we might find the result to be, we may be sure that the painting of the sculpture was done in good taste. He believed that sculpture on the exterior of buildings was not so deeply coloured by the Greeks as it probably was in the interior, and even in the latter it was done with very considerable reserve. In the middle ages, and in some places, even in the Renaissance, very deep colouring, intended to imitate life, was attempted. He was not inclined to sneer at some of those works, such, for instance, as are seen in the Sagro Monte, at Verallo; yet when it was carried too far, as in such instances as these, the result was not perfect. He believed that the practice of the Greeks consisted rather in toning and harmonizing all the parts together than in strong painting. He felt convinced that the works of the exteriors were only tinted and toned, and not highly painted. But that they were coloured to some extent he was satisfied, and the necessity for it was great, for no one could look at white marble in the pure atmosphere of that country without experiencing a blinding sensation to the eye. A portico of white marble in the palace built for king Otho at Athens was too bright to be looked at with any comfort, not having had any toning colour put upon it. It would take many years before time would do anything to soften it in that climate.

The PRESIDENT, Mr. A. J. B. BERESFORD-HOPE, said that he feared that they must now terminate this discussion. For his own part he would express his special thanks to his friend Mr. Gambier Parry for the way in which he had come forward with what he might call an explanation of the terms on which the different arts might understand each other, and might conclude a compact; and upon which, above all things, architecture might take its due and leading position as the art which built up the skeleton on which the person was afterwards to be constructed, and which again came in last of all, and gave the final touch of beauty to the body which had enveloped that skeleton. Those in that room would agree with him when he stated that the claims of architecture as the leading art under which sculpture and painting should take their places had not been sufficiently recognised in popular estimation. No better way of effecting its recognition could be devised than by such men as Mr. Gambier Parry—who was not himself an architect—coming forward as he had done this evening. Referring to Mr. Digby Wyatt's remarks as well as to the paper, he would, if it were allowable in him to recall that memory, remind the meeting that at the time Stothard, Flaxman, and Wedgwood were working, there was a house in London, which no longer exists, in which the taste of one, who as an amateur first dared to write on architectural art, was exercised on the combination of architectural form with chastened coloration. No doubt the experiment, offered as it then was to an age whose eye had been weaned from the appreciation of the value of the conjunction, was made in Duchess Street with a sparing hand. Still there it was, and filial as well as historical duty called on him to vindicate the name of the remodeller of that house and the author of "Household Furniture and Internal Decoration," and of the "History of Architecture" among the pioneers of the doctrine which they had heard so eloquently expressed that evening.

Mr. GAMBIER PARRY, Honorary Member, said, If he had stated anything satisfactory to the meeting he was more than repaid; if he had said anything which caused discussion he was still more repaid. The question which had been put to him by Professor Donaldson was most difficult to answer off-hand. It might be answered in two ways—one in the abstract, and the other in the descriptive. If taste ever arrived at the highest possible phase, it was at the time—there could be no doubt about it—when sculpture was painted; and if taste had arrived at that climax of art, could those who were its very creators tolerate the mere vulgarity of imitation? Had they not realised that which was not mere imitation, namely, art itself? We could all realise what a coloured statue was—not a vulgarly painted thing—but a beautiful finished work of art. On the subject of the imitation of flesh in a piece of sculpture, he had endeavoured to show that that imitation of flesh had not the intention to deceive them that it was flesh. The dimples were so soft that they were delightful to look at, and the texture was beautiful because it was marble; and if anything were put upon it, it could only be to perfect it as a work of art. The art-science of architecture was the science of casting shadows: the beauty of all effect depended upon the forms and amount of the shadows that were cast. The use of colour deepened and softened the whole work, and gave it the character of consummate art. It was the same in sculpture. That which would be crude in the raw material was made lovely and soft because it was tinted into beauty. If he spoke of painting in sculpture it was not to be supposed that he spoke of it as giving it the flush of life to mimic life, but merely that which rescued it from the repulsive deadness of crude white marble. But some one has well written, that "if the flesh is thus softened by colour the drapery must be enriched by the use of effective colour, otherwise the flesh would look dirty." That was the way in which the architectural colouring was used in the remains of Cyrene. There was a remarkable use of colour. It was that in which the general bulk of the architecture was softened into gently tinted forms, and upon and around them were used bands of sharp and positive colours.

The vote of thanks to Mr. Gambier Parry having been carried by acclamation, the meeting adjourned.

SUGGESTIONS RESPECTING THE ROOFS OF TEMPLES, CALLED HYPÆTHRAL, AT ÆGINA AND BASSÆ.

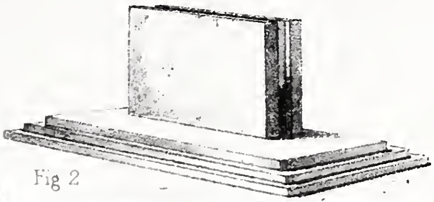

Fig 2

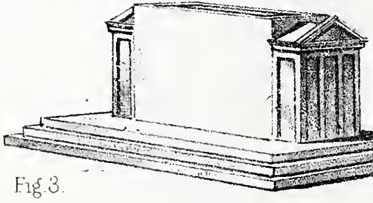

Fig. 3.

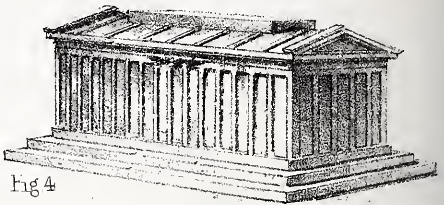

Fig 4

CYRENE

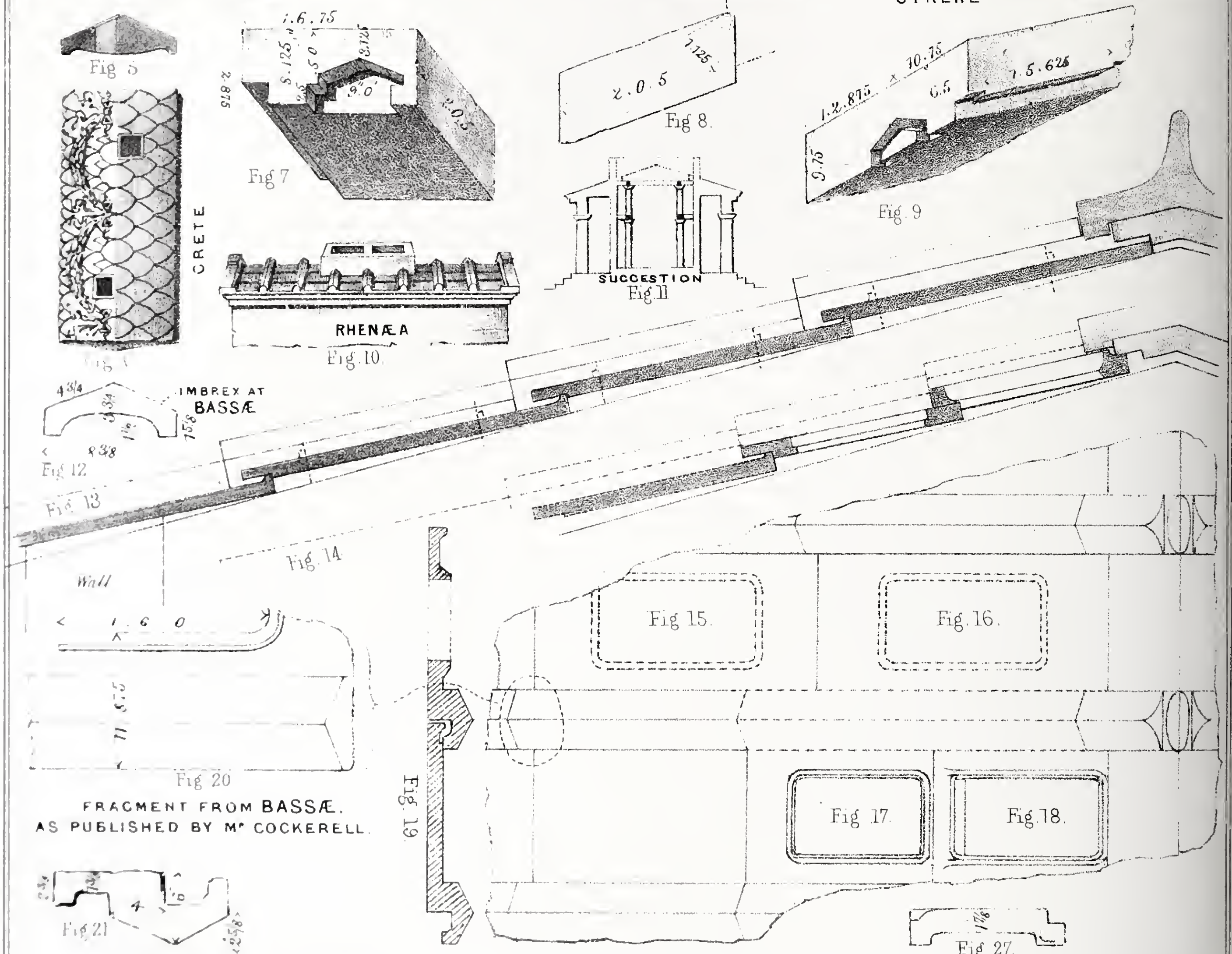

Fig 20

FRAGMENT FROM BASSÆ.
AS PUBLISHED BY Mr COCKERELL.

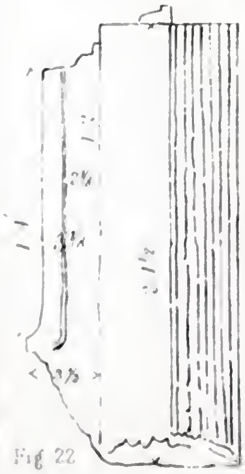

Fig 22

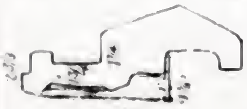

Fig 23

Fig 24

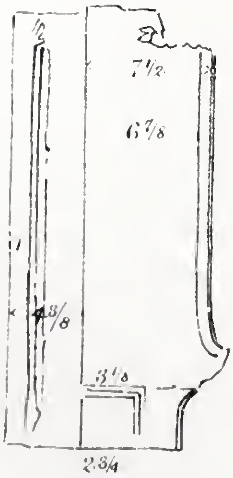

Fig 25

Fig. 26.

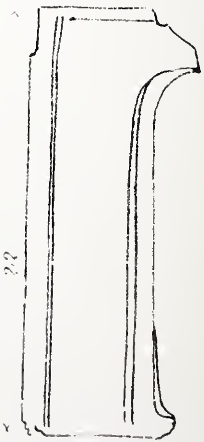

Fig. 28

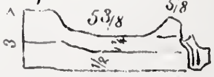

Fig. 29.

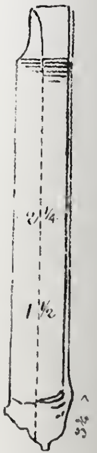

Fig 30

COPIES OF ORIGINAL SKETCHES MADE
IN 1811 12 OF TILES AT BASSÆ.

John W. Papworth
direxit

Lithographed for the R I B A by Kell Bros.

SUGGESTIONS RESPECTING THE ROOFS OF TEMPLES, CALLED HYPÆTHRAL, AT ÆGINA AND BASSÆ.

BY JOHN W. PAPWORTH, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, January 15th, 1866.

FOR the sake of those who may have been ignorant of the technical application of the word "hypæthral" until they have given their attention to the following remarks, it is necessary to premise that the Greek phrase ἐν ὑπαίθρῳ, as used by Xenophon, expresses the English *in the open air;* and τὰ ὕπαιθρα, as used by Polybius, *open country* such as Salisbury Plain. To this preface must be added the fact that perhaps the only classic author using the word with regard to a building is a Latin, and not a Greek, writer; this is Vitruvius who, in the first Chapter of his third Book, says that any temple was called hypæthral if it fulfilled the following conditions, namely, ten columns in front and in rear; two ranges of columns on each flank outside; two stories of columns detached from the walls inside; a porch in front and in rear opening into the central portion; and (the point to be considered this evening) no roof to the middle. The words in which he enunciates this last condition must be quoted; they are "medium autem sub divo est sine tecto," which may be safely translated, *the centre however under heaven is without a roof:* evidently Vitruvius by adding the words *without a roof* brings his *under heaven* down to the floor of the temple. As the temples at Ægina and Bassæ do not fulfil these conditions, it is apparent that our countrymen, who call them hypæthral, feel themselves compelled to consider that Vitruvius was incorrect in assuming that all the conditions which he names were necessarily coexistent in a hypæthral temple: but if his general definition be wrong, surely it is working on unsafe ground to adopt any one part of that definition as the characteristic of a hypæthral temple: they will certainly not allow me to say that only the temple that had ten columns in front and in rear (like that of Apollo Didymæus at Miletus, or that of Jupiter Olympius at Athens) was hypæthral: they will allege, undoubtedly, that they have taken the essential portion of the definition to be the characteristic: and it is left for me to demand from them proof that either the temple at Ægina or that at Bassæ had that characteristic, viz., *the centre under heaven without a roof.* The occurrence of the sunk portion of the floors of some temples is not enough to establish that it was meant to collect the rain-water that might fall through an opening in the roof: and if my opponents say that the temple at Ægina also had two stories of columns detached from the walls inside, thereby fulfilling another Vitruvian condition, it is fair for me to reply that such was not the case at Bassæ, and was not essential to a hypæthral temple. The conditions of ten columns in front and in rear, of two ranges of columns on each flank outside, and of two stories of columns detached from the walls inside, must be considered by me as absolutely unnecessary to a hypæthral temple if there is to be any agreement, between my opponents and myself, that temples with eight, or six, columns in front might have been hypæthral if they had a porch in front and in rear opening into the central portion; and even this condition must be abandoned by me at the request of my opponents. There then remains the fact that they have stripped the only specimen of a specification, for a hypæthral temple, of all authority; and can no longer insist upon my belief that a hypæthral temple must necessarily have *the centre under heaven without a roof* in the sense in which they receive those words: it will be enough if the existence of temples that could be called hypæthral be acknowledged by me.

It will be easily understood that, because no perfect example exists of such a hypæthral temple as Vitruvius has described, the commentators upon his description have differed in their deductions and inferences to such an extent that the subject has become a riddle stated in this form,—"How was any roofing put to a temple that had no roof in the centre." It will be equally easily comprehended that at the very outset of an attempt to solve the riddle, another puzzle presents itself in this shape,—If some temples had no roof in the centre, how was the roofing put to a temple that had a roof over its centre? The object of this paper is an endeavour to answer these questions; and in its course a discovery made by myself will be submitted for consideration, as it appears to some of my friends of sufficient importance to be brought before the Institute.

Eliminating the words *in the centre* the first question will stand thus,—How was any roofing put to a temple that was roofless? This is not so absurd as it sounds: for it intimates that there were ancient temples that were roofless. If satisfactory evidence for the existence of such buildings be adduced, great part of the difficulty attending any illustration of the Latin text will be obviated: and, because my memory does not recall any previous quotation of the words, even by those who have tried to collect the passages in Pausanias relating to the hypæthrum, this will be a good opportunity to cite that author (Attica); he states in the first Chapter that by the road from Phalerus to Athens is a temple to Juno, which has neither doors nor roof, *ἔστι δὲ κατὰ τὴν ὁδὸν τὴν ἐς Ἀθὴνας ἐκ Φαλήρου ναὸς Ἥρας ὄυτε θύρας ἔχων ὄυτε ὄροφον*, and this is all that he does say about it; in the fortieth chapter he notices a temple to Jupiter Pulvereus, which has no roof, *καὶ Διὸς Κονίου ναὸς οὐκ ἔχων ὄροφον*, and, likewise, this is all that he does state in regard to it. If he did not mean that these temples were ruined, they could only exist under two conditions, namely, having walls without external columns, or with them. My impression would be that the first of the two temples just named could have had no columns, but that the second might have had some such decoration applied to it. In fig. 2 of the accompanying illustrations (which are merely diagrams without the attempt to captivate your judgment by the application of any ornament) may be seen an idea of a temple which has neither doors nor roof; if one of the walls were taken down, the rest would be a sufficient representation of a mosque to the most scrupulous Mahometan; and therefore this, doubled, will relieve me from the imputation of putting before you something which would be inadequate for the religious services of Eastern countries. If the upper part of the openings be closed, the illustration fig. 3 serves to represent my idea of the second of these temples mentioned by Pausanias, which might have had some decoration by columns applied to it. Treating this decoration as of the simplest kind, namely, as a pair of columns *in antis* under a pediment, the evident result is the answer to the first question, for it shows how some roofing might be put to a temple that was roofless. The extension of this porch into a peristyle is so simple a matter as not to require more than an allusion to it, and we arrive at once at the peristyled hypæthral edifice, which may be supposed to be represented in fig. 4, that is a perspective view of a tomb at Cyrene.

The idea of adducing two of the illustrative diagrams now submitted is due to our late venerated President. In his folio work, 'The Temple of Jupiter Panhellenius,' &c., published in 1860, he observes on page 18, that "the clearest evidence of the hypæthral opening in the roof is given by the covers of sarcophagi formed in imitation of temples." It was his suggestion that made me seek in Beechey's 'Expedition to the Northern Coast of Africa,' published in 1828, the tomb at Cyrene; from the measured dimensions that have been obtained by me of another tomb of similar character in that locality, this appears about 20 ft. long by 6 ft. wide, and 8 ft. high from the ground to the ridge. Mr. Cockerell also referred in his work to the sarcophagus at Rhenæa, near Delos, with a sketch of it (here copied, fig. 10) prepared in perspective from the geometrical representations given in the supplementary volume to Stuart and Revett's 'Antiquities of Athens,' published in 1830, and edited by

Kinnard, whose suggestion that the two holes were intended as sockets for statues will, in my opinion, be set aside in favour of that which emanated from Mr. Cockerell, supported by the still more extraordinary instance afforded by the example shown in the accompanying rough sketch (fig. 6) of a lid of a sarcophagus from Crete. This example was kindly indicated to me by Dr. Birch, of the British Museum. As one of the treasures stored in the crypts of that establishment, it might have remained for years useless in the attempt at an elucidation of this subject; but when the article *Hypæthrum* in the 'Dictionary of the Architectural Publication Society' came to me in common with the rest of the Committee of Revisors of that undertaking, it seemed to me desirable (as its author, Mr. Ashpitel, was absent from London) to verify some of the references therein, and to consult Mr. Cockerell's valuable book, already mentioned, on the temples at Ægina and Bassæ, comparing it with Mr. Donaldson's work on the latter temple, as given in the supplementary volume by Kinnard previously named, for the proofs that these had been hypæthral, if not for the evidence of the manner in which the hypæthral character was exhibited in them. Now, with regard to the temple at Bassæ, it will perhaps be matter of surprise when it is necessary for me to say that Mr. Cockerell represented it, as well as that at Ægina, with a notch in the ridge; and at the same time furnished, in my humble judgment, tolerably decisive proofs that the ridges never had any notches in them. It is also necessary for me to say that it is generally understood that these designs in restoration were made many years ago, and that the late Professor had confined his attention in the ultimate publication of the work to the literary and æsthetical, rather than to the archæological, portion of his previous labours.

For a short time this part of my subject must be laid aside, in order to furnish to those who may have been ignorant of the way in which the covering was put to the roof of the Greek temples, some notion of ancient tiling. A very brief explanation will suffice, and will partly give an answer to the second question,—"How was the roofing put to a temple that had a roof over its centre." The tiles had a rim called the *harmus*, ἁρμος, on three sides of the upper face, and perhaps on the bottom of the lower face. These tiles were laid close together on rafters, so that there was a rafter under each pair of coupled side-rims; the joints were covered by a suitably worked tile, called by the Romans *imbrex*, but by the Greeks σπληνὸς; and the roof became water-tight because the bottom rims of one range lapped over the top rims of the range next below it. Sometimes the end of the *imbrex* was a mere check, or stop, decorated with a palmette or other ornament; but in several cases the end resembles the upper part and head of a *stele* and is decorated by painting or sculpture. The technical name for this stop appears, from Pliny, to be *persona;* but it is usually very improperly called an *antefixum* or *antifixa*. Sometimes the imbrices all finished at the eave, and there each ended with a persona, as in the cases of the temples at Ægina and at Bassæ, of the temple to Themis at Rhamnus, and of the Outer Propylæa at Eleusis. In other cases the *alternate* imbrices stopped short of the gutter, and then finished with a persona, as at the temple to Diana Propylæa at Eleusis; or without any persona, as at the temple to Nemesis at Rhamnus. The flat tile is represented to be thickest at the lower end in both the temples at Rhamnus. This system has been employed during ages in Italy for common roofing with tiles much less in size than those used at Bassæ, or at the Parthenon; but that it was employed by the Greeks, and executed by them in marble, was a point reserved for Mr. Cockerell and his colleagues (amongst whom the late Baron Haller must not be forgotten) to establish.

With regard to the application of such a method to magnificent structures in ancient times, Mr. Cockerell, speaking of himself and his coadjutors, observes on page 28 of his work already named, that "this most artificial and elegant mode of the covering of temples had already been discovered by us at the Parthenon, and the temples at Rhamnus and Eleusis, during the year 1811. It was justly admired as unknown till then, and pointed out to the commission of the Dilettanti Society, on their visit to Athens in 1812, and reported by them to Mr. Wilkins," who published it in the 'Prolusiones' in 1837, pp. 15, 16, 21-6, pl. v-vii; and p. 10, translated *imbrex* as *gutter*. Pausanias, v, 10, thought it worth while to record the period of Byzes of Naxos (circa 590 B.C.) as the inventor of marble tiles; and Mr. Cockerell, p. 29, calls attention to the improvement made by Athenian architects, viz., the manufacture of the joint-tiles in the same piece with the larger one, by which one side was rendered impervious to wet. This was not the case at Ægina (circa 470 B.C.), nor at the Parthenon at Athens (438 B.C.), but was found at Bassæ (circa 431 B.C.); although in the two latter buildings the tiles were of marble. On the same page, he mentions that at Ægina "the eaves-tiles with the joint-tiles or ἁρμοί attached to the antifixa, together with those surmounting the pediment, and forming the cymatium or ἐπιτίθηδας, were of Parian marble; those within this border were in a fine tile of light yellow earth, together with the saddle or ridge tile, and the painted antifixæ corresponding with those of the eaves, and surmounting the roof." He describes the tiles of the Parthenon as 2 ft. 3 in. square; whilst those of the temple to Apollo Epicurius at Bassæ, near Phigaleia, were 3 ft. $6\frac{1}{2}$ in. long and $1\frac{3}{4}$ in. thick, by 2 ft. $1\frac{1}{4}$ in. wide, as shown in fig. 15, the eaves-tiles being 4 ft. 2 in. long. The tiling at this temple near Phigaleia he deems, p. 53, to be "worthy of particular notice, as the most complete description of the temple roof hitherto known to us. Seventeen rows of marble tiles, the largest hitherto found, cover the roof: the five central ones (possibly a smaller number) formed the compluvium or hypæthral opening to the cella; *the extreme tile, with its corner shaped to its position, was happily discovered*" (this passage deserves a very marked gift of emphasis to it); "quite decisive of this interesting fact, but not determining whether the width of the opening consisted of five or three of these tiles." It is to be regretted that the word *compluvium* should have been used in this passage; but without occupying time in giving reasons for that regret, let me say that as soon as my eyes devoured the statement that "the extreme tile, with its corner shaped to its position, was happily discovered," it was evidently desirable to see the tile itself. Few of us can be unaware that the relics from Bassæ were deposited in the British Museum: thither of course it was my first occupation to go in search of the necessary fragment. It was not there; but on my explaining to Dr. Birch the shape of the fragment, his acute mind detected that my purpose related to the hypæthrum, and was charitable enough to take me into the crypts to examine the tomb which has the lid shown in fig. 6.

On the whole, it is well that the fragment was not at the Museum, nor in the possession of Mr. Fred. P. Cockerell. Bound by the necessity of the case, my only course was to scrutinize jealously the illustration given by his lamented father; and then it seemed that a discovery worthy of your attention fell into my hands. The great authority just cited seems to have been in error when employing the term *harmus* instead of *imbrex*, as well as when considering that this portion of a marble tile (as shown in fig. 20) was the corner of a notch in the roof. In his illustration of its face, pl. vii, the tile appeared to me to be placed with its end uppermost, and so far suits that theory as shown in his pl. v; but the moment that it is put in that which looked to me to be the true position as determined by his careful drawing of the end of the imbrex, the fragment is evidently the upper portion of the right side of a tile corresponding in size with the common tile in fig. 15, but having also a perforation or opening, surrounded by a chamfered fillet rising above the general face. The return of the lower part of the tile is suggested by the following facts; that, when such tiles were in place, the upper and lower border of the tile would appear to be equal in width; and that the fractures have occurred exactly where they might be expected if the restoration here drawn has truly represented a perfect tile. The raised fillet infers a movable rimmed cover, made either of wood or of marble. Mr. Cockerell's statement that seventeen tiles covered the two slopes is confirmed by the sizes above given of the eaves-tile and plain tile. When these facts are combined with the section of the temple determined by his dimensions, it appears, as in fig. 13, that no more than three courses of open tiles, of the size indicated by him, could have been used on each side of the ridge; and the highest of these would have come next to the ridge-tile. If the border to each open tile did return, as above stated, it seems needless to discuss at great length the practical difficulties that would be involved by considering the fragment as the upper portion of the right side either of a wide *opening*, or of two or more *slits*, which must have been either 5 ft. or 8 ft. 6 long in the tiling: in either case the rafters to the ridge could not well be omitted, and the work could not be executed so truly as with separate open tiles.

The practical difficulties of putting anything but a complete roof on to a temple deserve some notice, however, because no one who has written upon the subject of the hypæthrum, except Mr. Cockerell and Mr. Donaldson, seems to have given sufficient thought to the effect which a proposed transverse section would have upon the flank or longitudinal elevations. A notch in the roof was always considered an improbability to the mind of my teacher, if merely on account of the bad effect of the optical illusion which it would create, viz., that of the ridge sinking in the middle. The attic, now confirmed by these two sarcophagi, was an idea for many years familiar to me as a disciple of my father, and was exhibited by me to the writer of the article *Hypæthrum*, already mentioned, while that excellent exposition of contending theories was under revision; he did not notice it, because, as he truly observed, it was not supported by me with precedent, nor had it been publicly advocated so as to deserve consideration with the theories that had been published. In a second edition that difficulty, after to-night, will have been removed. The necessity for carrying the rafters through the opening to support the ridge if it were to be continuous, is obviated by making a notch in the roof, or by erecting an attic, as in these two tombs, figs. 4 and 10, where the ridge is broken upwards instead of downwards. Some advocates of old theories will probably be startled at the declaration of an opinion that hypæthral temples *might* be roofed entirely: that is to say, at my answer to the first question—How was any roofing put to a temple that was hypæthral? which is, that it might be managed by such tiles as those it has been my endeavour to restore from Mr. Cockerell's drawing of *the extreme tile with its corner shaped to its position*, as he supposed it; placing them with a gutter within a parapet formed by an attic, as fig. 11, over pierced lacunaria: but at the same time, Mr. Fergusson must be left at liberty to use the tomb from Crete, fig. 6, if he will render it available in support of his own theory, in addition to which he must be permitted to apply figs. 7, 8, and 9, as found at Ægina.

It is not my intention to discuss the various theories relating to the hypæthrum, at least on this occasion; they have been so fully treated in the article to which I have already alluded, that it only remains for me to support my own view by one or two extracts from it. First, it shows that people like Professor Ross have denied that the hypæthrum ever existed in a *finished* building—then that some advocates of the existence of a hypæthral temple insist that it must have been covered and must have had light somewhere: next it shows that if Vitruvius is to be believed, the centre was open: that a *religious dogma* was the *only reason* for the existence of *this open centre:* that no mere awning would have been a sufficient protection to the chryselephantine statues: that the temples at Ægina and at Bassæ were hypæthral, and that it would have been held *nefastum*, indeed impious, not to have left a vertical open space in their roofs: and more important than all, that the break or notch would be very little noticed, as the pitch is so flat; as the temples are generally on elevated sites, to which the spectator would look up; as much of the roof would be hidden by the eaves; and, finally, that nothing which really was required in carrying out the religious notions would convey the idea of ugliness. My use of these observations is obvious: if Bassæ was a hypæthral temple, here are the open tiles which *formed the hypæthrum:* if these gave a sufficient amount of open air in that temple, let me imagine that such was enough for any hypæthral temple: if the statues must be protected from casual rains the open tiles could have had a transparent cover, such as lapis specularis. Furthermore, let me contend that the notch in the ridge is intolerable, that it would be seen in very many cases from a slight distance, and that the Greeks have at least the reputation of having been in the habit of decorating their construction in a most seemly manner, such as is evidenced by the remains at Bassæ

And with regard to this decoration in a seemly manner, let me be allowed here a short digression upon two points of that subject of decoration which have occurred to me even since the last meeting of the Institute. It will appear from the diagram now submitted, that the rafters which carry the open tiles (let me say the hypæthral tiles) would be visible unless there were ceilings under them; and if the rafters were of timber, they would have required, as some think, to be richly painted. By Pliny the following dates are furnished. Pheidias died 432 B. C., a little after the date of the earliest encaustic painters whose names remain. Ictinus built the temple at Bassæ about 430 B. C.; it was not till about 382 that Brietes introduced the decoration of coffers in a ceiling with paint, "lacunaria primus pingere instituit, nec cameras ante eum taliter adornari mos fuit," and Pausias, the great encaustic painter, was contemporary with Praxiteles, about 364-349 B. C. Secondly, with regard to the preservation or even the decoration of the statues by a 'circumlitio,' that all deductions from the celebrated anecdote about Praxiteles expressing a preference for those of the statues which had received a circumlitio from the hands of Nicias are wrong, so far as they suppose that the circumlitio was a great addition because given by the hands of the celebrated *painter* Nicias. A careful investigation shows that Pausanias and Plutarch fix the epoch of this painter at about 322 B. C., making him one if not two generations younger than Praxiteles; and it is hardly to be supposed that the great sculptor would have thought his work improved by the handling of a youth whom we may call the *painter* Nicias 2, supposing that Nicias 1 was the favourite *polisher* employed by the sculptor.

In conclusion, it will appear that if there is any novelty combined with utility, in this matter of hypæthral tiles, no small thanks must be given to the system adopted in the case of the Dictionary: if anything that has been presented to your attention in this paper has been founded on sound principles, it would not probably for a long while have been taken into consideration, except under the pressure of that careful revision which each article receives. It is not intended to enter into any consideration of the number of such perforated tiles in each course; the quantity required by the temple of Apollo near Phigaleia, would depend upon various points, viz. whether the naos was ceiled or hypæthral; and whether the statue was in the cella behind the Corinthian columns: also, if the latter were the case, whether the open tiles were used on both slopes of the roof, or on one slope; and in the latter event, whether they were put on one side over the statue, or on the opposite side, it being assumed that the statue faced that eastern or side doorway, of which the existence was indubitable although Lenormant and Blouet had missed seeing its remains. The novelty of this view of one mode of forming the hypæthrum will be evident to those who can see, in the admission of the existence of such tiles, used as a hipped or a gabled roof with a gutter within parapet walls, a proof of the intention of the little attic shown in the tombs, figs. 4 and 10; a refutation of the dictum, that no temples were hypæthral unless they were decastyle with double peristyles, expressed by Wilkins in his 'Prolusiones,' p. 96; and also a reply to great part of the usual arguments about the admission of light and weather into the ancient temples that were not lighted by such windows as those at the Erechtheium: the latter method scarcely seems to have been sufficiently considered hitherto by archæologists, who should be prepared to find that this detail of the subject also offers some inducement to investigation.

Some architects may be inclined to think that, under the peculiar method of lighting here introduced to notice, there could not have been at Bassæ any such great space as is assumed to have existed between the tiles and the ceiling of the Heraeum at Olympia: because the omission of the soffits of the corresponding coffers of a ceiling fixed far below the open tiles, would hardly be sufficient to indicate the presence of this apology for a hypæthral opening; while, unless there were such rimmed covers as above suggested, the open tiles would admit water enough to flood the back of the ceiling during heavy rains. The importance of the subject will not be lessened by the fact that it may involve the question of construction and decoration under the tiles. If it should be held that the underside of the tiles did form the ceiling, and if the carriage of the tiles upon timber rafters should be thought an objection on account of the incongruity of wood and stone in a splendid interior, it will be desirable to remember, that there were solid marble beams 18 ft. clear in the propylæa at Athens; and that there were actually hollowed marble beams 13 ft. in the clear in the north portico of the temple near Phigaleia, whereas marble rafters to that structure would only be 11 ft. 6 in. in length.

It will be a matter of pleasure to the Institute to know that since these remarks were prepared, indeed, only on Saturday afternoon, our Fellow, Mr. F. P. Cockerell, has been so obliging as to place in my hands the memoranda made by Baron Haller for Professor Cockerell of the researches at Bassæ. The limited time I could give to these sketches has proved to me three things—that my restoration was founded upon a correct supposition, for a fragment, fig. 28, is shown with the double turn that proves the existence of an independent opening in a tile: secondly, that my restoration was to a slight extent too much in conformity with the other tiles, because the dimensions to the fragments, figs. 22 and 28, show the great probability that two hypæthral tiles, and one to make up in length, ranged with two of the usual tiles employed in the structure in question, the widths being the same of all the tiles: and thirdly, that the neatly drawn representation (fig. 20) given in Mr. Cockerell's 'Bassæ' either preserves the memory of a third fragment, or, if intended to repeat fig. 22 was not perfectly like it; it must be confessed that if this fig. 20 was intended to repeat fig. 22, the underside of the fragment (as indicated in fig. 25) fully justifies Mr. Cockerell's consideration that it was the bottom of an opening.

It should be observed that the figs. 12 and 21 to 30, which Mr. Cockerell is so kind as to allow to be copied, are accompanied by the following remarks (which are given here, as they stand in the original, equally exactly with the figs. 21 to 30) from the pen of Baron Haller: "*Je ne pouvois pas encore prendre une idée probable ou cette sorte de tuiles particuliere devoit avoir ete employé: peut-etre qu'ils sont en correspondance avec l'hypethre: les fragmens signés H j'ai trouvé dans l'interieure à la porte qui conduit qui conduit du peristyle dans la seconde partie de la cella, cipendant je n'ai pas rencontre d'autres que seulement ces deux exemplaires dans toute la fouille du temple.*" In fig. 13 are shown the ordinary tiles which are represented in figs. 15 and 16 as pierced; and fig. 19 is their section: fig. 14 is an attempt to combine the two fragments, figs. 22 and 28, with the ordinary tiles; but difficulties exist greater than those which are evident in figs. 17 and 18, which correspond to them.

These hypæthral tiles *must be later*, in my opinion, than the contrivance which Mr. Cockerell thought was indicated by the curb stones that, as given by him, pl. vi, figs. 4, 5, and 6, of his 'Ægina,' present discrepancies which have hitherto defied all attempts at making them suitable to each other, or to the rest of the work of the roof, unless they formed the border of such a pit in the sides of the roof as is indicated by the Cretan tomb. Most architects would agree in the conclusion that these hypæthral tiles were decidedly superior, in all ways, to the schemes requiring the curbs, and pits, and notches, hitherto put forward. No slight portion of my gratification at this public notice of the employment of open tiles in the roof of an ancient temple, will be derived from the permission to bring it before this Institute upon an occasion which draws together so many of the architects that, like him who has received their compliments, congratulations, and goodwishes this evening, have studied the existing remains of structures which furnish the facts for founding theories respecting the solution of the question —How was a hypæthral temple covered?

Professor Donaldson, Past President, said he should be happy to give some opinion, but the truth was he had considered the hypæthrum, or *sub dio*, as being a curious, but not very profitable, subject, because there was so much doubt and such scanty information on the whole subject, that he had never been able to arrive at a satisfactory conclusion. He did not see at the temple such a tile as Mr. Papworth alluded to, although Mr. Jenkins, Mr. Wolfe, and himself measured all the remains *in situ* most carefully. It might have existed originally, and might have been removed subsequently; but it seemed to him it was an inadequate explanation of the terms hypæthral and *sub dio*, to consider that a temple should be covered with perforated tiles, and then such a mode of admitting the light was most insufficient. If there were great objections to having a break in the ridge line of the roof, the attic might be carried up over the internal columns without difficulty, which might afford a satisfactory solution on that point. In such a climate it was not necessary that the inside of the temple should be closed in, for they found by the buildings at Pompeii, that the atrium, or first court of the houses, was an open one, and exposed to all the varieties of weather and seasons; and if this had been prejudicial, it would not have been prevalent. The principal statue in the temple, such as the chryselephantine ones of Minerva and Jupiter, might have been covered with a canopy to protect it from the weather; and Pausanias mentions that in the temple of Jupiter Olympius damp upon the floor was prevented from injuring the statue by oil placed on the marble slabs; while in the Parthenon, on the contrary, water was placed on the floor near the pedestal of the statue to prevent its injury by the dryness of the rocky soil. Then inside the Parthenon there was a step two or three inches high, where the inside peristylium went round the cella, which would show that, as in the inside of the courts at Pompeii, it was to get rid of the wet in the impluvium of the court, and prevent it going over to the side. But there were so many difficulties round the subject that, although he had bestowed much attention to clear up this question of the hypæthral arrangement of temples, his only conclusion was, that it might have been an open court clear up to the sky, and could not have been lighted by mere tiles, and that the portion over the statue of the deity might have been covered in by a continued roof, or by an awning (*velarium*), to protect it from the weather. He had great respect for the investigations of Mr. Papworth, but the evidences were so slight and unsatisfactory, that it was impossible to arrive at a safe conclusion upon this very vexed subject. They were much indebted to Mr. Papworth for having undertaken various difficult subjects of architectural research, and he begged to propose a vote of thanks to him for his suggestive and very interesting paper: no man was more competent than he to illustrate this subject, either from the monuments, or by his literary researches relating to ancient architecture. He had no doubt whatever as to the door, which Mr. Papworth alluded to, the dimensions of which were clearly taken, but it was very unusual to have a doorway from the cella to the peristylium.

Mr. C. C. Nelson, V.P., Hon. Sec. For. Cor., asked what was the height of the doorway which Messrs. Lenormant and Blouet had failed to perceive.

Professor Donaldson replied, that the wall remained about three or four feet high from the surface. The views showed about four or five feet in various parts.

Mr. Nelson begged to second the vote of thanks to Mr. Papworth, who had taken great pains with the subject. Having himself been a little behind the scenes, he was anxious to hear the *dénouement*. The drawing of Baron Haller clearly showed the return of the tile, unless it was only a work of the imagination. There was the fragment of tile returned at the ends, showing that it was a perforated tile.

Mr. Thomas Morris, Associate, remarked that the late Mr. Wilkins's opinion was corroborative of that of Professor Donaldson. In the Glossary to Wilkins's translation of Vitruvius it was stated that hypæthral temples consisted of three aisles; the two outside roofed, and the middle one open to the sky.*

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* "*Hypæthral.* A temple whose cella was in part exposed to the air. These temples had a double range of columns within the cella, dividing it into three alæ, or aisles. The alæ on either side were roofed, but that in the middle had no covering. The term is derived from ὕπαιθρος, signifying, open to the sky."

When they considered the climate of Greece, it was likely that they (the Greeks) would be as glad to admit the air freely into their temples * as the Pompeians were to have it in the midst of their houses. In our own Royal Exchange the central portion was open, though we have a comparatively severe climate; and it was the same with the Corn Exchange, in Mark Lane, which originally had roofed porticoes at the sides, just like a hypæthral temple. The central part received its covering (from his design) about twenty years ago only.

Mr. **Papworth** replied that he was happy to have brought before the Institute any matter which tended in some way to clear up the difficulties which, as Mr. Donaldson truly stated, subsisted with regard to the nature and even to the existence of the hypæthrum. He thought that the words of Varro respecting the dius Fidius, viz., " itaque inde ejus perforatum tectum ut videatur divum id est cœlum," were directly in favour of the suggestion that these open tiles might have been used in Italy as well as in Greece; that even a single tile of this kind would fulfil those of Ovid, viz., "exiguum templi tecta foramen habent;" and that, with a couple of them placed one on each side of the ridge it might be said with Servius, "suprema pars tecti patet." He left to other critics the task of distinguishing what Vitruvius meant by "jovi fulguri et cœlo et soli et lunæ ædificia sub divo hypæthraque constituantur," because he had a strong impression that the hypæthral class of temples indicated by that author were almost hypothetical, in fact, that Vitruvius was describing the existing condition of the decastyle temples to Apollo Didymæus near Miletus, and to Jupiter Olympius at Athens, neither of which had their roofing completed at the time when his compilation was made, and fell into the error of supposing that these were the models for all similar structures having as many columns. If the addition of Fidius and Terminus, to the list just given, completed the number of deities who had hypæthral temples, the names were very few. It would be fair to recall to the minds of Mr. Donaldson and Mr. Morris the cataracts of rain, and the inclemency of equinoctial storms and wintry gales which, in sunny Greece, had almost prevented even English travellers from prosecuting a journey. Of course he (Mr. Papworth) was aware that the allusion to the temple at Athens involved him in an obligation to account for the very doubtful text of Vitruvius, "hujus autem exemplar Romæ non est sed Athenis," by adding "in astu Jovis in templo Olympii" as a conjectural reading that was preferable in his opinion to " decastylos est in templo Olympii." The usual reading " octastylos et in templo Olympio" had done great damage by leading people to infer that the Parthenon had an open centre: no ancient opening in the roof of the cella was mentioned by modern visitors before the explosion; they noticed that the building was dark, and that parts of the marble tiles, having fallen, were kept in the building: this disposed of the idea that the other two-storied temples at Ægina, Eleusis, Ephesus, Olympia, Pæstum, and Tegea were necessarily hypæthral in the sense of having an open well in the roof over the cella. Indeed Eleusis is supposed to have been capable of having the light shut out; Ephesus had a cedar roof; Olympia and Tegea were roofed; and there only remain Ægina and Pæstum to be explained: either might have had wells in the slopes of the roofs, or have had an attic, as in fig. 11, in which some open tiles might have been employed. There is no evidence that the temple at Bassæ or the Parthenon had open centres; open tiles must be accepted in one case, and may be presumed in the other: and he (Mr. Papworth) imagined that some day it would be found that translucent or transparent tiles had been more commonly employed than had hitherto been supposed.

The best thanks of the meeting for this very interesting paper were unanimously voted to the author; and the meeting adjourned.

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* Temples of Apollo would be significantly open to the SUN.

SUGGESTIONS RESPECTING THE ROOFS OF TEMPLES CALLED HYPÆTHRAL, AT ÆGINA AND BASSÆ.

EXPLANATION OF DIAGRAMS.

Fig. 2	Reduction of fig. 4 to the condition of being without roof and doors in illustration of Pausanias.
,, 3	The same, with the addition of roofed porches.
,, 4	Tomb at Cyrene; as drawn by Mr. Beechey.
,, 5 and 6 ...	Cover, of a tomb from Crete now in the British Museum, about 7 ft. 6 in. long by 3 ft. 2 in. wide, and $11\frac{1}{2}$ in. thick; the hole in front is $6\frac{3}{4}$ in. by $7\frac{1}{2}$ in. and 14 in. from the edge, that at back is $7\frac{1}{4}$ in. square and 17 in. from the edge; both have a $\frac{1}{2}$ in. rebate $\frac{1}{4}$ in. deep in addition.
,, 7, 8, and 9.	Portions of *curb* found at Ægina; as drawn by Mr. Cockerell; probably suiting a well placed not so near the ridge as in fig. 6.
,, 10	Upper part of a tomb, at Rhenæa near Delos, about 5 ft. 5 in. long by 2 ft. 10 in. wide; from Mr. Kinnard; the cross wall is remarkable.
,, 11	Suggested position of attic walls, at temples having two stories of columns inside, suitable to a cavædium whether corinthium, tetrastylon, or displuviatum, as well as to the atrium testudinatum here shown by dotted lines as if roofed with open tiles.
,, 12	Imbrex, or tile covering joints, found at Bassæ: its place has not been determined, and its variation from the other imbrices seems to indicate that there were two sorts of tiling.
,, 13	Section of the ordinary marble tiling at Bassæ.
,, 14	Section showing an attempt to employ the fragments figs. 22 and 28 in combination with the other tiling; but this is subject to the remarks concerning fig. 12.
,, 15 and 16...	Plan of two ordinary marble tiles at Bassæ; the dotted lines represent openings suggested by fig. 20.
,, 17 and 18...	Plan showing a restoration of the fragments fig. 22 and 28 with the needful length of a short tile; but this also is subject to the remarks concerning fig. 12.
,, 19...........	Section of an ordinary marble tile, as used at Bassæ, and of fig. 15.
,, 20...........	Fragment of a marble tile found at Bassæ, as drawn by Mr. Cockerell.
,, 21 and 23...	Sections of a marble tile (fig. 24) found at Bassæ, as drawn by Baron Haller, with the breast, fig. 22, back, fig. 25, and face on side of return, fig. 24.
,, 27 and 29...	Sections of another marble tile (fig. 28) found at Bassæ, as drawn by Baron Haller, with views of the sides figs. 26 and 30.

ACCOUNT OF THE RESTORATION OF THE DUTCH CHURCH, AUSTIN FRIARS,

Principally from Notes by the late WILLIAM LIGHTLY, Fellow,

By EDWARD I'ANSON, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, January 29th, 1866.

THE church of Austin Friars, near Old Broad Street, in the City of London, was founded in 1253 by Humphrey Bohun, Earl of Essex and Hereford, surnamed the Good.

Records are existing of grants of land and other property made to the church in the years 1299, 1321, 1363, 1373, and 1394. The style and arrangement of the first church of 1253 probably bore a close resemblance to the rectangular part of the Temple Church, which was erected just previously; that is to say, it consisted of a broad nave and side aisles of unusual width, forming three gables at the west end, and was lighted by triple lancet windows in each bay of the side aisles.

Another Humphrey Bohun, Earl of Essex and Hereford, grandson of the founder, rebuilt the church in 1354, and the window tracery and those parts of the walls and buttresses where the bands of flint-work still remain belong, I believe, to this rebuilding; and that there must have been another and later rebuilding, though no record of it exists, is very evident; for the window jambs and arches, and the nave arcades are clearly of a much later date, and lead to the conclusion that this later rebuilding of the church was about the end of the fifteenth century.

Until the Reformation this church, with the monastic buildings appertaining to it, belonged to the Augustine Friars. On the 12th of November, 1539, Thomas Hammond, the last prior, and twelve of his canons surrendered the monastery to Henry VIII. It was valued at £57. In 1540 the king granted to Sir Thomas Wriothesly the great house or messuage within the site and precinct of the late house of Austin Friars, and in the following year gave other portions to Sir W. Paulet, Lord St. John, and Sir Richard Rider, and on the 22nd July, 1550, Edward VI. granted to the same Lord St. John, afterwards Earl of Wiltshire and Marquis of Winchester, all the upper part of the church, the choir, transept, and chapels. His lordship converted the transept into a place for the stowage of corn, and of the choir he made his coal house. The next Marquis stripped the lead off the roof, and sold the monuments, paving stones, and other moveable portions of the building for the sum of £100., and on the site of the house, cloisters, and gardens he erected the large mansion known as Winchester House.

The church and convent, as rebuilt in 1354, must have been of considerable extent, for the buildings and grounds extended from Broad Street northward to London Wall, and from the north corner of Broad Street to the church of St. Peter-le-Poor. The church consisted of nave, north and south aisles, north and south transepts, south porch, choir, chapels of St. John, St. Mark, St. James, St. Thomas, chapter house, and cloister, which last appears to have been on the north side of the church; the churchyard was on the south side. At the intersection of the cross there was a spire or fleche, which was regarded as one of the remarkable objects of London; for Stowe, writing in 1593, says, "The church is a large thing, having a most fine spiral steeple, small, high, and straight; I have not seen the like." This small spiral steeple was overthrown by a tempest of wind in the year 1362, but was forthwith raised again. It so remained until the end of the sixteenth century, when it became dangerous; for we find that the Lord Mayor and citizens, writing to the Marquis of Winchester, to whom the property then belonged, on the 4th August, 1600, requesting him to restore the steeple, as it appears he had promised to do, and threatening legal proceedings if he did not; but promises and threats appear to have been alike unavailing, so the steeple with the east part of the church was taken down, and, says Stowe, "houses for one man's commodity raised in the place, whereof London hath lost so goodly an ornament; and times hereafter may more talk of it.

As to the part of the church which was westward of the transepts, and which still remains to us, we find that Edward VI. in his Diary has the following minute: "29th of June it was appointed that the Germans should have the Austin Friars for their church, *in purum et liberam elemosynam*, to have their service in for avoiding of all sects of Anabaptists, and such like." It was thenceforth called the Temple of Jesus, and some glass quarries, which at the late restoration were preserved from the old windows, bear the legend of Jesus Temple, are dated 1550; two others bear the legend, Temple of the Lord Jesus; these were all replaced in the two windows at east end of the north and south aisles. From the date of the first minister, John a Lasco, in 1550, to the present time this church has remained in the hands of the Dutch, and has been managed by consecutive elders of that church to the present time. The sequence of the ministers, from the date of the first appointed up to the appointment of the present minister, Dr. Hendrick Gehle in 1830, is recorded by a tablet in the church. As the church existed within the last twenty years, it will be remembered by all who frequented the busy purlieus of Threadneedle Street and Broad Street, in a retired thoroughfare, hemmed in by the houses of London merchants, which within the last few years have been converted into offices.

The west front of the building, together with part of the north aisle, were the most conspicuous; the other portions being surrounded by buildings. Its large west window, not remarkably good in character, and its decorated aisle windows, formed one of the most noticeable remnants of mediæval architecture which the City contained. The exterior had been carefully repaired about 1828, but owing to the want of knowledge which prevailed on this subject in the early part of the century, not in the careful manner which characterises restorations of the present day. It was, however, then a matter of comment, and the subject was warmly discussed in the 'Gentleman's Magazine' of that date.

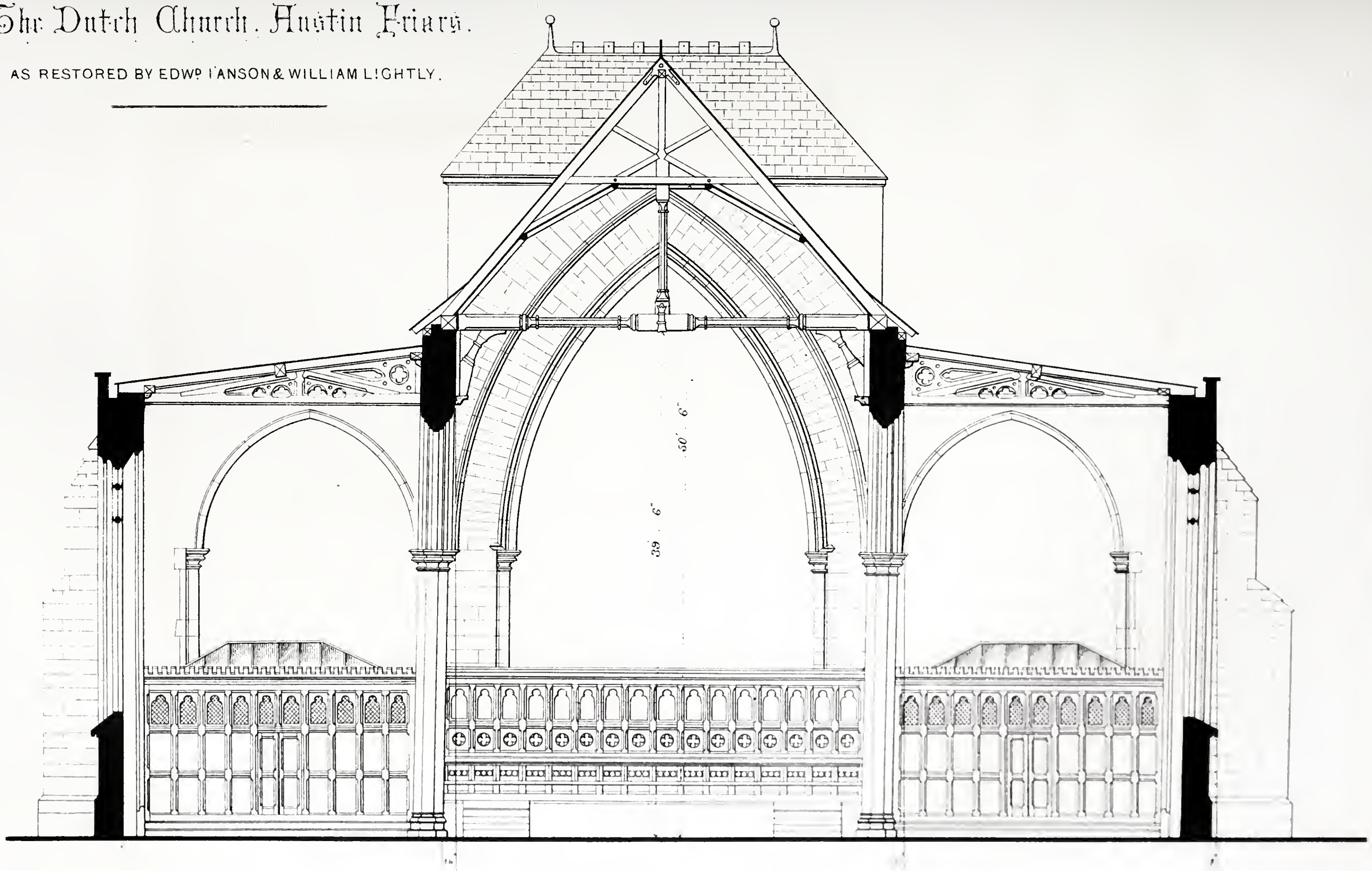
The old water tables of the buttresses appear to have been removed, and the decaying mullions and tracery,—chiefly of Reigate fire-stone, and much perished,—were restored with Roman cement, and the surface of the walls rendered over with the same material, whereby nearly the whole of the old work was covered up. Over the west door a canopy appears to have been added. Some further restorations were in progress in the year 1862, when a fire destroyed a large portion of the work, and left the building in a condition which appeared ruinous. Nearly the whole of the roofs of the north aisle and nave were destroyed, and the upper parts of the masonry much injured, but fortunately the tie beams of the nave were left remaining, although damaged. After the fire the building was surveyed by the Fire Office Surveyors, who considered it past repair, and such was also the opinion of the District Surveyor, who officially condemned it as a ruinous building.

At this time I was professionally consulted. I found the building in the state I have partially described. The pillars on the south side of the aisle were not only as much as 17 inches out of the perpendicular, but the whole church had taken a southward settlement. On plan at the level of the top of the walls having assumed a bow form, gradually increasing towards the middle, where on the north side of the south aisle the versed line of the arc was, and still is, 17″. On the north side of the aisle it was somewhat less, and on the inside of the external walls of the north and south aisles it was less still; the external walls having suffered the least movement, especially the wall on the north side.

Having reference to the extremely dilapidated, and, as it appeared to me, ruinous condition of the church—to the very great value of the land in Austin Friars—to the inconvenient size of the church for the purposes to which it was required, its size being utterly disproportionate to the requirements of

The Dutch Church. Austin Friars.

AS RESTORED BY EDWD. I'ANSON & WILLIAM LIGHTLY.

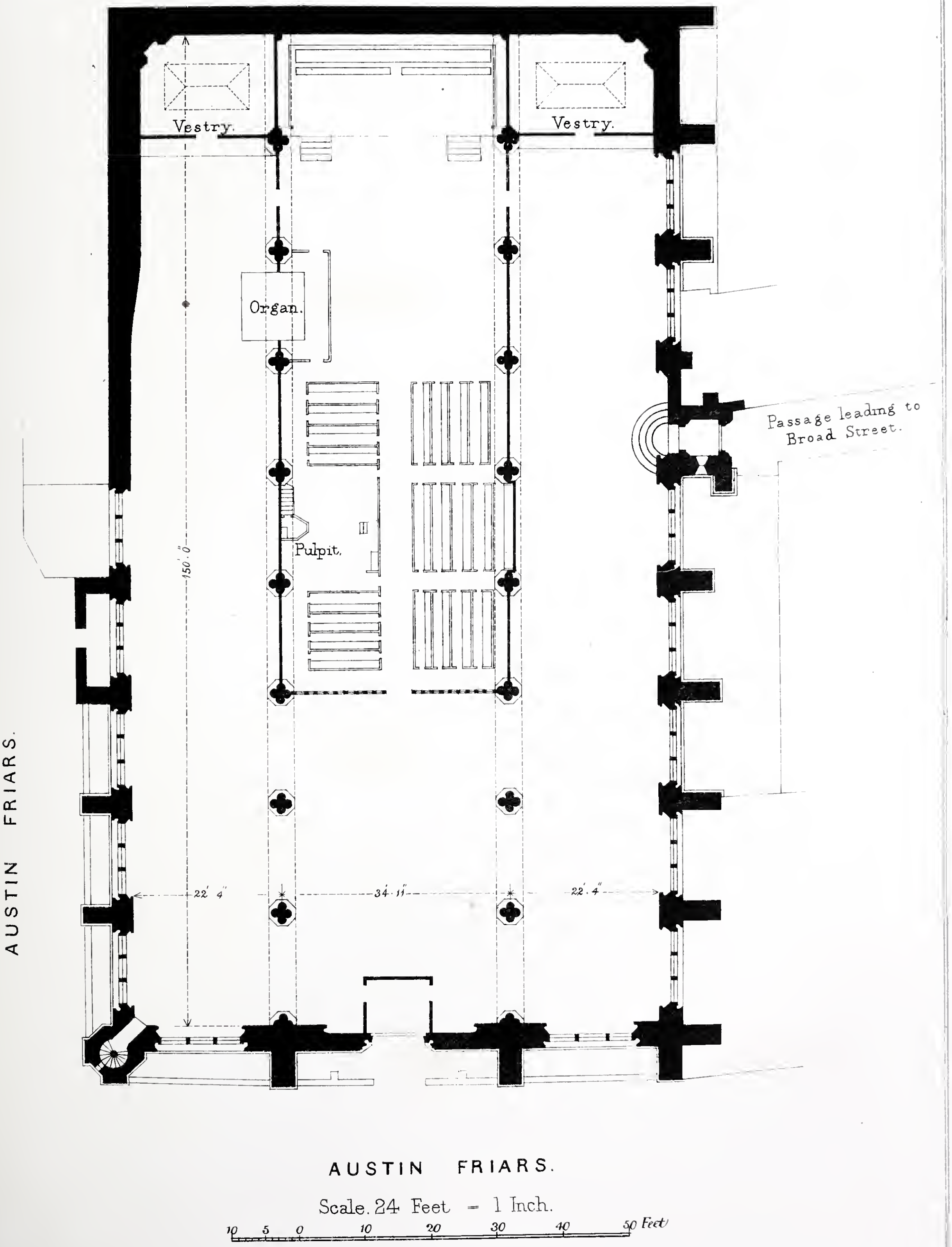


TRANSVERSE SECTION

Scale 12 Feet - 1 Inch.

The Dutch Church. Austin Friars.

AS RESTORED BY EDWD. I'ANSON & WILLIAM LIGHTLY.



Scale. 24 Feet = 1 Inch.

its congregation,—I came to the conclusion that it would be in all respects more desirable to pull down the existing,—as it appeared,—ruinous fabric, the restoration of which would necessarily be very costly, and to build another church more suitable to the requirements of the congregation. I accordingly so advised the trustees; but being desirous not wholly to lose the tradition of the ancient church, I proposed the erection of a building of mediæval architecture, and engaged the services of my late esteemed friend and pupil William Lightly, who had long worked with me in other matters, to co-operate with me in preparing a design for the proposed new church. This was accordingly done; when it having become known that it was the intention of the trustees to remove the old building, so strong a manifestation of public feeling was evinced by letter in the daily papers of July, 1863, and very influential and pressing representations made to the minister and elders of the church, that the trustees were led to reconsider the question. Although I still held unaltered my views as to the practical utility of erecting a building more consonant with the requirements of the congregation, I felt there was no absolute impossibility in preserving the work as it stood, and in effecting a restoration. The committee of the Dutch Church feeling that they were trustees not only to a limited congregation but to the general public, who they believed, by the strong expression of opinions which were made, were seriously desirous of retaining the old church, resolved in deference to the opinions so expressed to abandon their original intention, and, if practicable, to restore the church. I therefore, in conjunction with my late friend Mr. Lightly, undertook the task of retaining and repairing the existing portions of the church, and of restoring such portions as were destroyed. Having once come to that determination, we endeavoured conscientiously to restore the building as it stood, retaining every part of the ancient fabric, uncovering and restoring such portions as were hidden and masked by the work of the seventeenth century and later times.

One of the plans exhibited shows the arrangement of the church as we found it. At the west end were vestries, an organ loft, and a library. The general arrangement was picturesque, but of the worst character of the seventeenth century. The lower part of the stone piers was lined with wainscoating, as also the external walls. The altar table was raised on a platform enclosed with a wooden balustrade, with wall linings at the back of a more ornamental character; all of the work of the end of the seventeenth or beginning of the eighteenth century. The altar was decorated by a painting representing an arcade of the Ionic order, containing the Creed and Commandments. On entering on the work we recommended the entire removal of the vestries, organ loft, and libraries, which entirely filled up the western bay of the church, the wall linings, and the altar decorations; and we proposed to remove the vestries to the east end adjoining the altar, one of which is used by the minister, and the other by the elders of the church; keeping the vestries low, so as not to interfere with the building or to abridge its apparent size. We also proposed the removal of the south porch (which was not without its picturesque aspect), and to replace it by a doorway more in accordance with the style of the church; for this we had no precedent, and it is strictly an addition. We also recommended the enclosing by wooden screens of the bays at the east end of the church, which affords ample space for the congregation; and we recommended the decoration of the broad wall space at the east end by a fresco painting, but this being inconsistent with the service of the church was not carried out, nor were we allowed, (as was also suggested), to use any coloured glass for the windows. After the resolution which the trustees came to at the end of July, 1863, to restore the ancient building, and certain arrangements necessary in consequence of the altered plans, some time necessarily elapsed before contracts could be obtained for the restoration, and it was therefore not until October of that year that the tenders were received and the work was actually commenced.

Seeing the extremely critical condition of the piers of the arcades, our first attention was directed to an examination of the foundations of this part of the building. We therefore had the substructure of the piers exposed, and found that they rested on brickwork, having apparently been underpinned, and that the foundations were perfectly sound and sufficient. Having fully satisfied ourselves on this point, we resolved to retain the walls and arcades out of the upright as we found them, deeming it, in fact, impracticable to effect any alteration in this respect short of rebuilding the whole, and to put on the new roof without rebuilding them. The old vestries, library, and organ loft, which disfigured the western end of the church, having been removed, the first step was to shore up the old walls and place strutted shores between the arcade walls, and the walls of the nave and the aisle walls, and then to make good all the unsound parts of the walls and arcades which were in a defective state.

It was resolved to retain the flat over the south aisle, which was little injured, and the plaster and ceiling which concealed it internally was removed. This roof was constructed with very imperfectly trussed principals, and some which had no bearing on the south wall were removed and new ones introduced, with a proper bearing on the south side, and made to run completely through the arcade wall of the nave. The old king posts and braces were re-framed, and the spaces filled in with pierced panelling. This work was necessarily done with great care and caution, one truss only being removed at a time. The old timbers were then wrought as they stood, and new boarding was added on the under side of the rafters. A new flat, corresponding with this, was then placed on the north aisle, the tie beams being carried through the arcade wall as described above. Three of the six tie beams of the nave roof, though they remained in their places, were found on a close examination to be completely burnt through at the ends; and the wall plates, which were large pieces of timber, were found to be in many places so much decayed that it was necessary to replace them, and the great size and weight of the timbers to be moved on the top of the injured overhanging walls, and the removal and substitution of new tie beams, caused some anxiety. Eventually, however, this was accomplished, and new plates and tie beams were inserted and framed, by means of wall pins and braces, to the tie beams of the aisle roofs, which had been previously brought through the walls, and a strong king post truss formed on each tie beam, the whole firmly bound together by strong wrought iron straps, uniting the tie beams of the nave with the principal rafter of the aisle roofs.

Six large dormer windows were introduced as a sort of clerestory at the east end, as but little light could be got at that part of the church, being the part where the service is performed, owing to the adjoining buildings having been brought close up to the walls.

On the outside the roofs are covered with rough boards, felt and slates, on the inside with white deal, formed into panels by mouldings, to cover the intersections and joints, and a moulded and embattled cornice fixed on the face of the wall plates. The whole of the internal boarding is varnished without any stain.

The building having been thus covered in, the shores, by which the arcade and external walls had been sustained whilst the roof was being re-formed, were struck, and though the walls and piers have been carefully watched, no further settlement or movement has been detected.

The internal masonry was now cleaned, and the chalk facing re-pointed. The tracery of the windows, which it was intended to retain, on examination proved to be impracticable, for all mouldings of the windows had been chipped off, nails driven into the joints of the mullions, round which twine had been twisted, and the mouldings run in cement. The tracery also was so much defaced, and so injured by decay, that it was found necessary to restore the whole, which has accordingly been done, and a careful and faithful restoration made in Portland stone. The old tracery was of several kinds of stone, principally Aubigny and fire stone. The graves with which the area of the church was covered, and of which many had been burst in by the falling of the roof timbers at the fire, were filled with concrete, and the stone paving re-laid, care being taken to retain every old stone, including those in which brasses had been inserted, of which there is a goodly number, principally of Purbeck marble, but every brass had disappeared.

The eastern part of the church is now enclosed by an oak screen, and the pulpit, organ case, and seats required for the congregation, are constructed with oak.

The east wall of the church now demands our attention; this was originally the arcade between the nave and the transept. Previously to the present restoration it was concealed by a plaster screen before referred to, on which was painted the Creed and Commandments, and behind this, on its removal, was found another lath and plaster construction, painted with a curious perspective interior. The removal of these screens revealed to us the construction of the east end, from which it would appear that the great arch which partly supported the steeple or fleche had failed, and that another inner arch and piers had been added beneath it. This was probably done when the spire was rebuilt, after it was thrown down in 1362. This inner arch we completely unmasked, and restored as much of it as is left uncovered by the brick wall, by which the east end of the church is enclosed.

Externally, two only of the bays on the south side have been re-faced with Kentish rag stone, all the rest remain covered with plaster.

No variation has been made in the form of the church except the removal of the old porch on the south side externally, and the substitution of another porch. With the view of obtaining light to the enclosed part of the church, six dormer windows have been formed in the roof. To both of these additions I have before alluded.

Since the restoration of the church was commenced, a large area of ground has been excavated on the south of the church, towards the east of the present building, just at the point where traces of the former transept may have been expected to have been found, but no indications whatever of any former building has been met with.

At the east end, adjoining the church, is a house belonging to our Fellow, Mr. Arthur Ashpitel, and there may still be seen in some recesses in this house the arch mouldings on the east side of the arch which now terminates the church at its eastern end.

To a great extent I have in the preceding notes followed the memoranda which was left by my deceased coadjutor, to whose ability in conducting the works, and of whose unceasing interest in it whilst he still lived, I am glad of this opportunity of recording, and also of my own deep regret that so promising a member of our body should have been so prematurely taken from us.

Allusion is made in Mr. Lightly's remarks to the similarity between the Temple Church and the Austin Friars Church, and to the one having been built shortly after the other, but if I am right the Temple Church was built nearly a century earlier. The size of the two churches is very different, the Temple Church, between the walls, being 58 ft. by 82, whilst the Dutch Church is 80 ft. by 150. The former has also only five arcades, whilst the latter has nine. The height of Austin Friars Church to the under side of the tie beams is 40 ft.

In resumé, I have only to add that the works of restoration were begun late in the autumn of 1863, and the church was opened for public services in September of last year—1865. The total cost of the work executed will not be less than £11,000. There still remains portions of the external masonry, and particularly the west front and some of the buttresses on the south side, which require restoring and part rebuilding. It is the intention of the Committee gradually to complete the work they have begun, so that it will be seen they have responded cordially to the opinion so warmly expressed, calling for the preservation of the ancient church. The work has cost already as much as would have sufficed for a new building; the outlay is not yet completed, and the sacrifice in value of land, which might have been otherwise appropriated, is at least equal to, if not more, than the cost of the works. Now this monument, which contains the mortal remains of some royal and many illustrious men, and which from its large size alone entitles it to be called a noble building, will probably remain for generations to come a record of former generations—of those times when large monastic establishments occupied a site now densely covered with houses devoted to the purposes of trade and commerce—and of the truly conservative spirit of the present guardians of the church, who, at no small sacrifice, have preserved the ancient church of Austin Friars.

Mr. Benjamin Ferrey, Fellow, rose to propose a vote of thanks to Mr. I'Anson for the interesting paper he had favoured them with. It was interesting in many respects, and particularly because it described to them the state of one of a class of buildings, of which very few now remained in the metropolis. So many of them were destroyed, that they ought to be very thankful for those which still remained, and he trusted they might be preserved to them. With regard to the ancient form of the church of Austin Friars, they had little to refer to besides the nave, and nothing could be said upon it beyond what had been stated by Mr. I'Anson, and they must feel thankful to that gentleman for having been the means of preserving to them so much as remains of this ancient monument of mediæval architecture. He (Mr. Ferrey) remembered inspecting this church in company with some archæological friends, and he was struck with the simplicity and grandeur of its proportions. At that time there was a vehement desire to destroy it, and build in its place a smaller structure, they were therefore indebted to Mr. I'Anson for yielding his own opinions to those which were in favour of its preservation. There were no unusual features about the church: it had simply some of the grand proportions of the churches of that period. They had to thank Mr. I'Anson very much for having presented them with so interesting an account of its early history, and for having been the means of restoring it to the state in which they now saw it. He therefore proposed that their best thanks be accorded to Mr. I'Anson for his paper. The author of the paper, had alluded to the arcade being much out of the perpendicular. He could quote many examples, if needed, where the columns were considerably out of the upright, without danger to their security. He particularly referred to the Church of St. John, at Devizes. Anyone on entering that Church would be oppressed with a sense of real danger, and yet it had been in that position, with its arcade marvellously out of the upright, for upwards of a century. The mere fact that the columns of a church might be out of the perpendicular, was alone no proof of danger; they must look at the other elements of weakness or strength. In the Church of Austin Friars he could say, when he entered it he saw no danger, and Mr. I'Anson had told them that the foundations were not in a condition to lead to the idea of danger; therefore he thought, in this instance, it was a most happy circumstance that they had so judicious and astute a friend as Mr. I'Anson, who had secured that building to them, instead of permitting it to be pulled down, as otherwise must have been the case.

Mr. Edmund Woodthorpe, Fellow, said, as he was the district surveyor who condemned this church, he might appropriately second the vote of thanks to Mr. I'Anson. He had great love for mediæval art, and ancient art of any kind; but in the case of this structure, the clustered columns and walls were so fearfully out of the upright that he could not, as a public officer, allow them to remain in that state till some security had been given him that, in the event of an accident and any lives being sacrificed, he might be protected from the verdict which a capricious jury might return. If the members looked at the section exhibited, they would see that he was borne out in the condemnation which he passed upon it. At the same time, when he went into the examination of the foundations of the clustered columns, external walls and buttresses, he could see no objection to them, provided his friend could obtain the certificate of some eminent church architects, to screen him from the wild verdicts which juries sometimes recorded. He had great pleasure in seconding the vote of thanks, and he thought they had had preserved to them a good monument of that date, although he must say he was not so ardent an admirer of the beauties of the structure as some.

Mr. **Alfred Strong**, Associate, remarked, that in the case of a church in France, which was about to be appropriated to the secular purposes of a riding school, the walls were considerably out of perpendicular, and bulged outwards. The way in which they were brought up was by using iron tie-rods, fitted at both ends with nuts and screws, and plates. In the absence of gas, rows of lamps were suspended beneath the rods, causing them to expand with the heat. As this expansion increased, the screws on the outside of the walls were turned, and this was done simultaneously and so gradually to each rod that the walls were brought into the perpendicular again, and were now standing in that position.

Mr. **John W. Papworth**, Fellow, said, that the meeting must be very much obliged to Mr. I'Anson for making it acquainted with his success in keeping up arcades, which, according to the section shown, beetled so much as 17 inches in 39 feet. It would be very interesting to enquire into the causes of this varied action of overhanging work; the north aisle appeared to have beetled 2¾ inches in 31 feet; the north arcade 16¾ inches in 39 feet; the south arcade 17¼ inches in 39 feet; and the south aisle 8 inches in 33 feet 4 inches. He should be glad to hear of other instances of safety where such main portions of the building had gone out of the perpendicular. In a case of which he had been informed, the walls had beetled outwards about 14 inches, through the thrust of a very flat roof, and the buttresses of course went over with them. The persons engaged in restoring that church had taken out the foundations both of the buttresses and of the wall, and filled in 2 or 3 feet depth of concrete; but, remarkably enough, no one had thought what would happen if the wall itself was to be made upright, the result of which would be that a vacancy of about 14 inches would be left between the back of the secured buttress and the face of the restored wall. He mentioned this to show it was well to think twice before these works were described as successes. In reference to the case mentioned by Mr. Strong, he believed that heat was used in the operation of bringing walls upright which was carried out at Clapham Church, in Surrey, under the superintendence of his father, in 1829. He (Mr. Papworth) would be glad to hear whether, on the examination of the buttresses on the south side of the church, any under-pinning of them had been noticed.

Mr. **I'Anson**, Fellow, replied, that he did not examine the under-pinning of the buttresses.

Mr. **Ferrey**, Fellow, had not come prepared with a schedule of buildings with walls out of the upright, but he had no doubt he should be able to supply several instances. He thought the illustration now before them was a very good one.

Mr. **William White**, Fellow, mentioned an instance in which he had brought the walls of a church back to the perpendicular by the expansion and contraction of iron—(charcoal in boxes being employed for the heating)—which was all very well when the walls were properly secured by a tie-beam roof. There was one point which he thought had not been sufficiently noticed. He understood Mr. I'Anson to state, in the case of the Church of Austin Friars, that the walls had spread, not in the way Mr. Papworth spoke of, but they had followed each other to the south, which was different from the spreading of the upper part of the walls, because directly a heavy weight was put upon the walls, the tendency would be very great to throw them still further out of the upright, though this, of course, might be provided against by a sufficiency of abutment to support them. He knew a church in which one of the arcades of the nave beneath the old roof had gone to the south in the manner described. The north side had followed to a smaller extent. The foundations, especially on the south side, were very bad, from its being on the slope of a hill, and a clay soil. The whole of this appeared to have gone downwards under the old roof, and about eighty years ago they rebuilt the clerestory upon that sloping arcade, with a good oak tie-beam roof, well braced and framed on to the corbels; but its tendency southwards was still so great, that during the eighty years that had elapsed it had been gradually going still further to this side, and over the chancel arch there were several settlements into which the hand could be introduced, and in a short time it would be down. But an attempt at supporting the arcade was made by putting struts from the points of the arches down on to the south wall. They felt, evidently, the insecurity of the sloping arcade, and they either put on these struts at that time, or else, perhaps, they left them there when they re-built the clerestory. But these struts were actually pushing out the aisle wall to such an extent, that it had drawn the first piece of the roof several inches from that wall. That was a case, without any doubt, for the drawing up of an arcade in the manner described, and he did not at all think it would be necessary to re-build the arcade, for the stone work was substantial, and the masonry was not too solid to resist the force of drawing; it was, however, solid enough to stand if it were pulled up, and the only way would be to get sufficient struts against the inside of the north arcade wall to keep it from going further southwards when the lateral tension was applied; for the north arcade plainly was already giving, since, apart from the indications named, there were also cracks in the spandrils of that arcade, which showed that it was gradually going. There was another point to which he did not think sufficient attention had been called, viz.—the grand spaciousness of the interior of the Church of the Austin Friars. This was well deserving attention, for it was in that respect a type of plan admirably fitted for congregational worship at the present day.

THE PRESIDENT, A. J. B. BERESFORD-HOPE, M.P., &c., said, they were much obliged to Mr. I'Anson for his paper, and for the discussion that had taken place upon it. He had listened to the paper with peculiar interest, for Austin Friar's Church was one which he looked upon, long before it had been burnt and restored, as a very beautiful and interesting monument of ancient conventual architecture. He, too, was himself one of that party who had met within its roofless walls to hold conference with those gentlemen who, so honourably to themselves, rescinded a determination to which they had seemed committed, when reason was shown to them why they should do so. Credit was also eminently due to Mr. I'Anson for the avowal of the part he had then taken, so manfully and so modestly made that evening. It was honourable to him that he should have been able so candidly to explain the course he took in such a way as to reconcile his former opinion with his present action. Connected with this work was the memory of one whom they all esteemed so highly and mourned so sincerely—the accomplished Mr. Lightly—and this recollection imparted a mournful interest to the restoration of Austin Friars. As to the grand spaciousness of the Church, he fully agreed. In the book which he wrote some few years ago on the English Cathedral of the Nineteenth Century, in which, to say the truth, he really dealt with the question of large town churches, making the idea of a "Cathedral" the point of departure, and the centre around which to group his thoughts, he had made especial reference to this Church of Austin Friars. It was his ideal of one of the two alternative types which he believed the town churches of our age ought to follow. He pleaded that they should not be the tiny structures which the middle ages of England had scattered over cities, like York and Chichester, but that they ought rather to aspire after the size and the dignity which often marked the town church of the Continent. Either like a large class of those Continental churches they ought to exhibit something of the Minster character—the character which we associate with cathedrals and abbeys, although found in England at S. Mary Redcliffe, at Newark and elsewhere—or they should follow that other type of large church, where breadth made up for height—churches of a single story, with wide naves, slender pillars and a large internal area. The Temple Church was an early adumbration of this idea, and Austin Friars at a later date—larger though less ornate than the Temple Church—was a reproduction of the same model, with the substitution of wooden roof for groining. He had anticipated that Mr. Ferrey, connected as his name was with that great man, Pugin, would have remarked upon the fact, that beyond a doubt Austin Friars Church had helped to form the style of that eminent artist, for no one could see St. George's Church, in the Borough, without feeling that the mind of its architect was saturated, as it were, with Austin Friars, of which it was almost a re-production, with steeple and chancel added. Carpenter was another man who owned (as he happened to know) his obligations to Austin Friars Church, and in his Church of St. Mary Magdalene, in Munster Square, a strong recollection of that model was evident. Here was a proof that the building had not been fruitless in forming the modern style of ecclesiastical architecture, when two conspicuous edifices, which marked its earlier phase, had been modelled on it. This was an additional reason why it would have been a sore grief and pity if it had been allowed to be swept off the surface of the earth, in a day too, when the other large mediæval churches of the city, St. Bartholomew and St. Helen, were being restored.

The President then put the vote of thanks, which was unanimously passed.

NOTES ON A VISIT TO THE AUVERGNE CHURCHES.

By Edward I'Anson, Fellow.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, 29th January, 1866.

I did not recollect when I proposed to mention the churches of Auvergne that the subject had already been spoken of in this room by Mr. Street. Referring to his paper I see that he has most ably described the character of these interesting buildings, but as I was not prepared under any circumstances to have entered at length into a description of the buildings, I have the less difficulty in offering the very few remarks which it occurred to me might help in filling up the evening.

I exhibit some unfinished and too hasty sketches of some of these buildings, and a plan and section of one of the churches which gives the form of all the Auvergne churches. What is particularly striking is, that throughout a certain district there is a most marked peculiarity and distinctive form, more exclusively and generally prevailing than in any district of which I am acquainted—less mixture of buildings of different styles and dates. There are other districts, such as Normandy and the neighbourhood of Perigeux, where there are very distinct styles prevailing, but there is more admixture in the same locality of buildings of different character, and so far as I recollect nowhere the same style is so exclusively used as in Auvergne. The style, too, although not so perfect as the Norman and some other provincial styles, is generally picturesque, and strikingly successful in the arrangement and grouping of the apsidal chapels, and it is also remarkable for the successful employment of the external mosaic work with which the exterior of all these churches is decorated.

The west fronts generally are remarkably plain. It is said that all of them had two western towers, but these have ceased to exist; and as at St. Etienne at Nevers, Notre Dame at Dijon, and even at Notre Dame of Paris the west front forms a mask to the building, and does not reveal by the gabled termination of the nave roof the general form of the church, as is commonly the case in our English cathedrals.

M. Mallay, a French author, who has published an account of the Auvergne churches, enumerates no less than eighty-four churches within a limited district which partake of the character of the church, (Notre Dame du Port Clermont), the plan and section of which is now before you. The date of these churches does not seem to be accurately determined, but it ranges from 1080 to 1200; and they are evidently nearly contemporaneous—a prevalence of the pointed arch in some showing the later date—but the same general character prevails throughout. They all have the nave covered with a barrel vault and aisles with quadripartite vaulting, without ribs, and as there is no clerestory the roofs are heavy and dark in appearance.

The chancel, or east ends with the radiating apsidal chapels, as may be inferred from the plan, produce the most pleasing effect both internally as well as externally; and under most of the churches there is a crypt at the eastern end. The churches in the principal towns have been recently restored, and it appears to me with great success. The roofs externally are crowned with a low ridge or cresting. All the ridges I saw were evidently restorations, and so classic in character, as to raise a considerable doubt as to the restoration being correct; the gabled crosses are also peculiar, and somewhat Byzantine in character. The capitals of the columns internally partake largely of the character of the classic Corinthian model, with strongly marked Byzantine character in the foliage, and very different from the contemporaneous architecture in the north of France.

The most remarkable of these churches are those at Issoire, which is the largest; Notre Dame du Port at Clermont; one at St. Nectaire, considerably smaller than the others, but with a beautiful grouping of the apsidal chapels; and one at Orcival, the latter standing in the midst of most lovely scenery, surrounded by a most quaint and primitive village, and celebrated in the surrounding country for the miraculous cures of Notre Dame D'Orcival.

This notice, as I stated at the commencement, is very slight: it is but an indication of churches which exist in a district, very near to one visited annually by the many English tourists who resort to the springs of Vichy. A district abounding with interest to the geologist, where the ancient lava streams still are as fresh as the lavas of Etna, although there has been no volcanic action in this district within historic times, and one which offers much of interest to the architectural student and archæologist,—a rich and comparatively unworked field to the architectural draughtsman, and to the photographer.

Although not in the Auvergne style, no. architect would visit this district without seeing the remarkable church at Le Puy, whose great cavernous portico is unsurpassed in grandeur of effect by any building with which I am acquainted, and whose front bears a striking resemblance to many of the cathedrals of Italy. Near it is also the remarkable church of St. Michael, with a bell tower, which might pass for Italian. Mr. Street's paper contains the fullest account of these buildings.

The Rev. RICHARD BURGESS, B.D., Hon. Member, said he had listened with great attention and pleasure to all that had been said this evening. He confessed he never knew so much about Austin Friars Church as he had learnt this evening, and he rejoiced at having the opportunity to be present. The subject had been brought before them in a way that was most pleasing—with great simplicity and clearness, and no attempt beyond stating the real facts of the case, and that was the best way of conveying information. He heartily joined in the thanks given to Mr. I'Anson, and he thought that gentleman deserved their further thanks for the observations he had made upon the churches of a part of France, which he (Mr. Burgess) had visited once: perhaps he should go there again next summer, and he was sure he should derive benefit from what he had heard on that subject this evening. He felt he was a great loser by not being able to attend more frequently the meetings of this Institute, for which he entertained the highest respect and veneration. He concluded by proposing a further vote of thanks to Mr. I'Anson for his second communication.

Mr. WOODTHORPE seconded the vote of thanks, which was unanimously agreed to.

Mr. THOMAS MORRIS, Associate, remarked that the selected district seemed to be one of great historical importance. Like Mr. I'Anson, Mr. Street had brought before them (not very long ago) some admirable illustrations of the general character of those churches, as they appear to an observer passing through the country. But there was a higher interest in the churches of Auvergne, and that part of France, from the historical link which they seemed to afford in connexion with the Romanesque. In England we had a very clear account of our architecture from the Anglo-Norman period, but were accustomed to regard the Saxon as a mere sub-class of the Anglo-Norman mode. We had no complete specimens of it. Beyond that, we were lost in the void of the heptarchy; or if we went back to the Romans, we had no considerable remains of their edifices, but simply sufficient to shew that they adopted the same style in their colonies that was practised in the mother-country. But in this southern part of France, to which Mr. Street and Mr. I'Anson had devoted attention, stood the ancient city of Nismes, a city of great original grandeur, with temples, baths, city gates, amphitheatre and aqueduct. It still presented remains, in fact, which were not equalled, perhaps, in any other place out of Rome itself. They found, in some of the ancient remains (as the temple of Diana, more probably

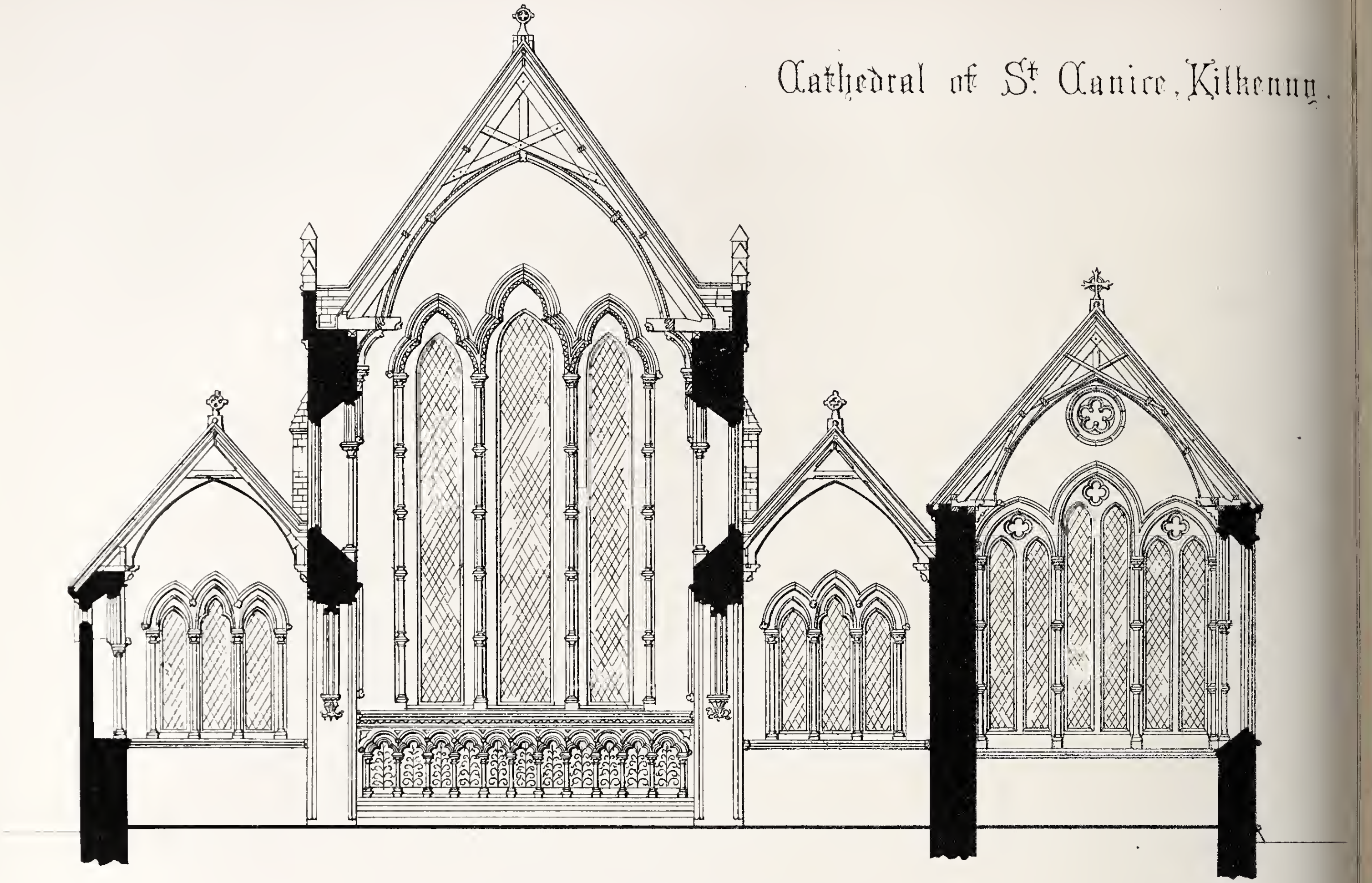
Baths,) the *barrel or cylindrical vault*, which, with other forms and features of classic origin, was particularly noticeable in the churches of Auvergne and neighbouring districts; (at Valence it was employed lengthwise, and at Tournus in a series of transverse compartments): and generally, the details and forms of the Roman work, seemed to have been incorporated with more or less of transitional feature. He thought, indeed, that the whole history of Romanesque architecture, might be traced from those classic remains, down to the Norman. The link in the history of architecture, for which materials were so deficient in this country, could possibly thus be supplied; and great service would be rendered by any gentleman who, following such pioneers as Mr. Petit, Mr. Street and Mr. I'Anson, should record the historical bearings of Southern France, on the transition from the classic to the mediæval styles.

THE REV. R. BURGESS having promised a paper on a future occasion on the Aqueducts of Rome and the supply of water to that city,

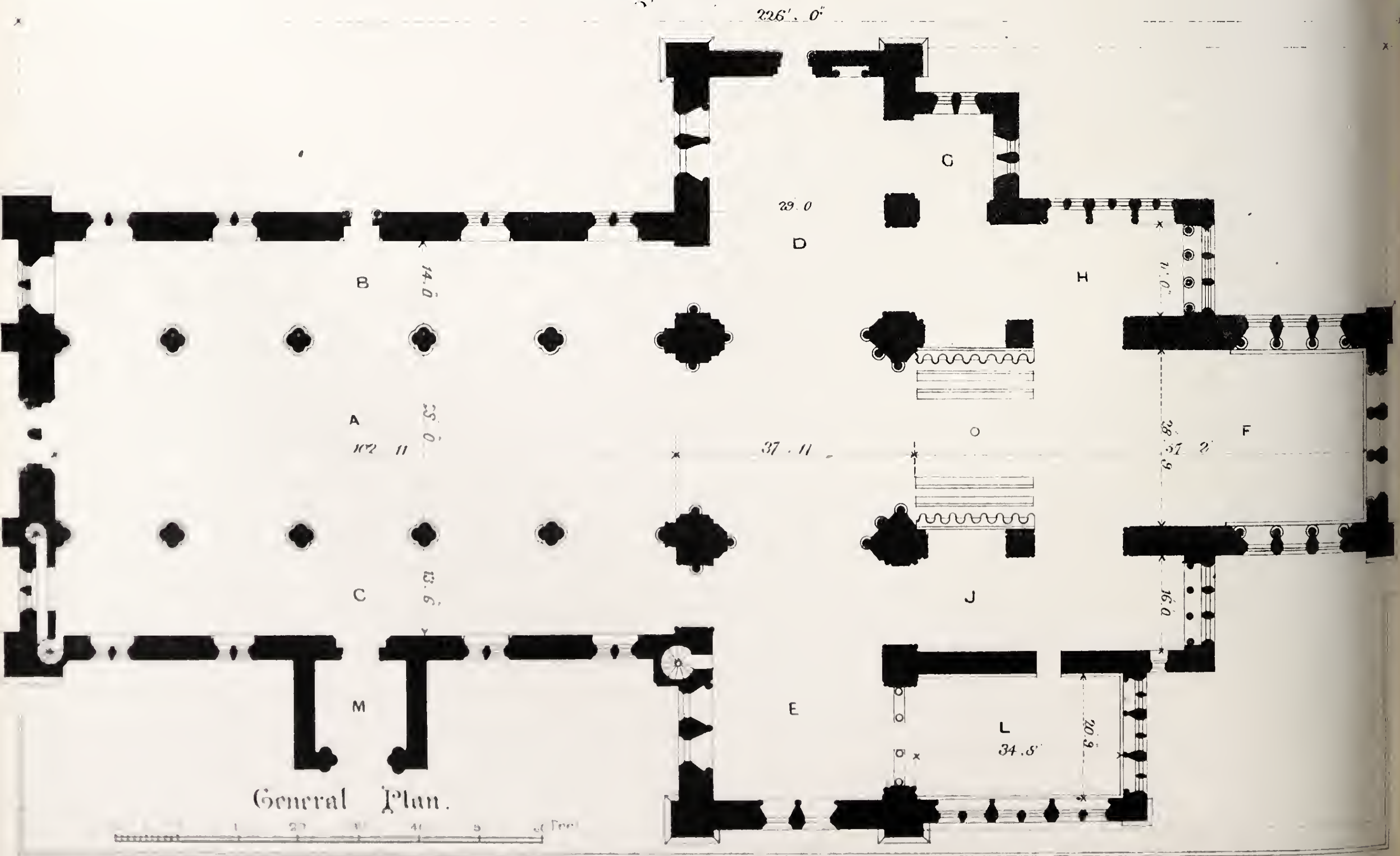
THE PRESIDENT said he was sure such a paper would be welcomed with both hands. It was his pleasing duty again to thank Mr. I'Anson. He was quite sure that gentleman had as yet only gleaned a tithing from the surface of the land, and he hoped that the writer, having once made himself acquainted with that most interesting district of Auvergne, would not make these notes the conclusion of the information with which he was prepared to favour the Institute.

The vote of thanks was then passed unanimously, and the meeting adjourned.

Cathedral of St. Canice, Kilkenny.



Choir, Chapels and Chapter Rooms.
looking East.



General Plan.

Lith^{d} for the R.I.B.A. by Kell Bro^{s} London W.C.

ON THE CATHEDRAL OF ST. CANICE, AND OTHER ARCHITECTURAL ANTIQUITIES, KILKENNY, IRELAND.

By T. Newenham Deane, Fellow.

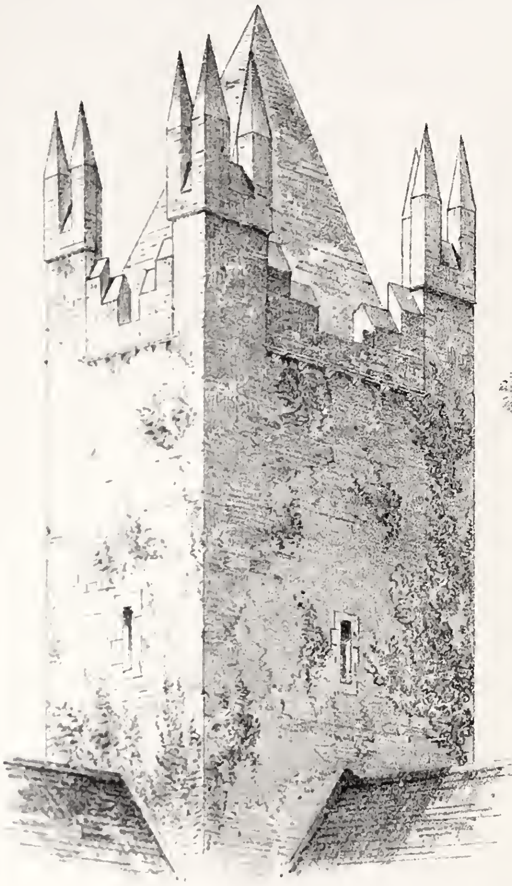
Read at the Ordinary General Meeting of the Royal Institute of British Architects, February 12th, 1866.

The Cathedral of Kilkenny being now in process of restoration, many things have been brought to light connected with its original design, which may make a short paper on the subject interesting to the Institute. In connexion with the description of the Cathedral, I purpose touching briefly on the other buildings of interest which still exist in Kilkenny—ecclesiastical, military and secular.

Under the first of these heads I would enumerate the Cathedral; the Augustinian Abbey of St. John the Evangelist, whose charter, in the "Monasticon," is dated 1220, founded by William Marshall, the elder, Earl of Pembroke; the Dominican Abbey, founded by William Marshall, the younger, 1225, dedicated to the blessed Trinity, commonly called the Black Abbey; the Franciscan Abbey, founded 1230; St. Mary's Church, probably finished 1328; the Vicar's Hall, near the Cathedral, and other buildings forming part of the Cathedral establishment. Under the second head, the Castle forms the most interesting object of attention. Under the third head, I would mention the Hospital founded by Sir Richard Shee, 1581, and several houses dating from the Sixteenth Century and onwards.

The Cathedral.—A full description of this beautiful and interesting structure has been given by the Rev. James Graves, in his book on the "History and Antiquities of Kilkenny," from which, and other authorities, I have made a few notes. St. Canice, to whom this church was dedicated, was a man of distinguished piety, the intimate friend of St. Columbkill, on the model of whose foundation at Iona he founded a monastery at Aghaboe, in Upper Ossory, which existed in 577. The earliest allusion to Kilkenny, in "The Four Masters," A.D. 1085, mentions that Cael Cainnagh, or the Church of Canice, was partly burnt—probably a wooden structure, which was shortly after rebuilt, and destroyed by fire 1114. After this second destruction, it appears to have been raised again, of more costly materials. Numerous carved stones, of twelfth-century work, have been found built into the walls, and under the paving of the present church; and extensive foundations at the eastern end of the Cathedral indicate that a church of that period existed. In 1189, William, Earl Marshall, the elder, through a marriage with Isabella, only child of Richard FitzGilbert, Lord of Ossory, became Earl of Pembroke and Lord of Leinster. With this nobleman commences the authentic history of Kilkenny. He was appointed Governor of the Kingdom of Ossory, by Prince John, 1191—Richard I. being then in exile. He erected the Castle 1192, returned to England 1194, came back to Ireland 1207, *rebuilt* the Castle of Kilkenny, and gave a charter to the town, under which it still enjoys certain privileges. In 1202, we find the see of Ossory at Aghaboe, St. Canice's original foundation, under the prelacy of Felix O. Dullany, who was succeeded by Hugh Rufus, or De Rous, an English Augustinian canon, and the first English Bishop of Ossory. This prelate exchanged the see lands of Aghaboe for others at Kilkenny, belonging to the Lord of Leinster, and probably used the church which he found on the site of the present cathedral, as it is stated "he did nothing *further* for his episcopal see." From manuscripts in the Ormonde Collection, we find that a cathedral existed in 1229. This may have been the ancient church of Dullany's time, or the choir of the present church, used as a cathedral prior to the completion of the structure. Bishop Hugh de Mapleton carried on the work with great vigour from 1251 to 1256, and nearly brought it to a finish. Geoffry St. Leger, 1260, completed the Cathedral, at great

Cathedral of St. Canice, Kilkenny.



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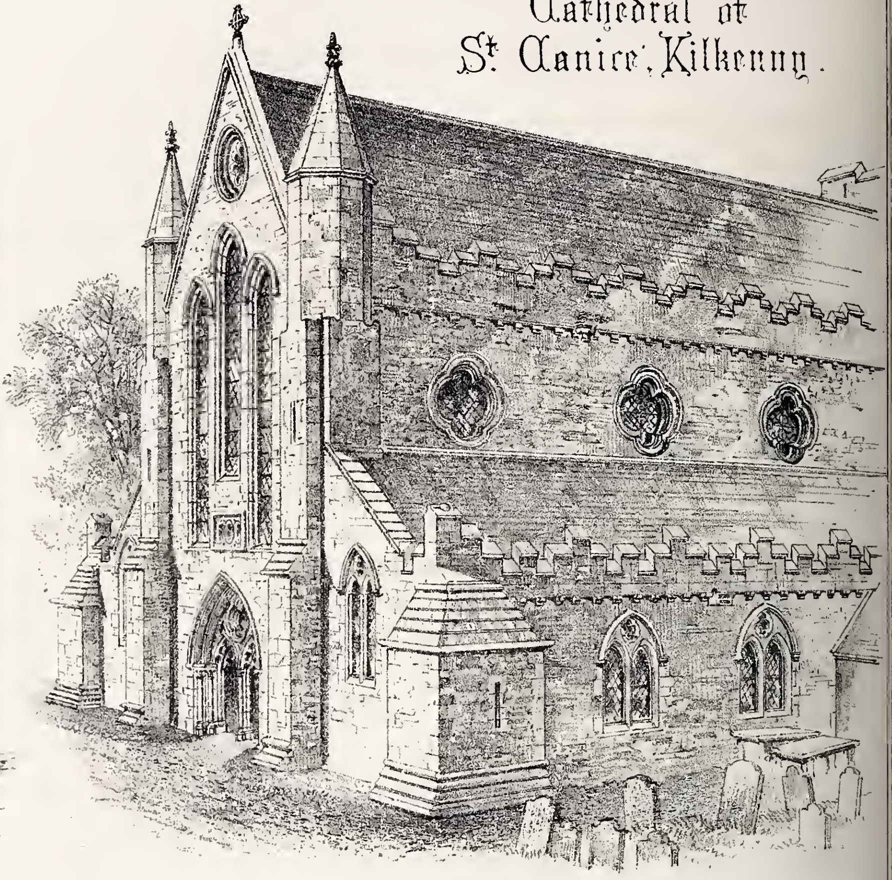

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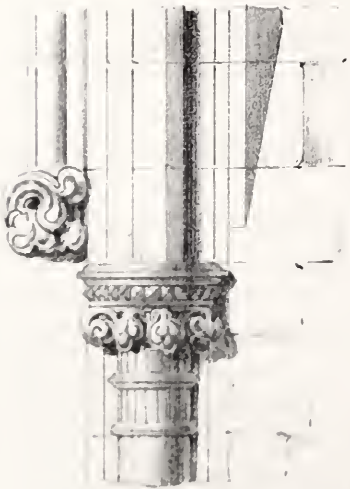

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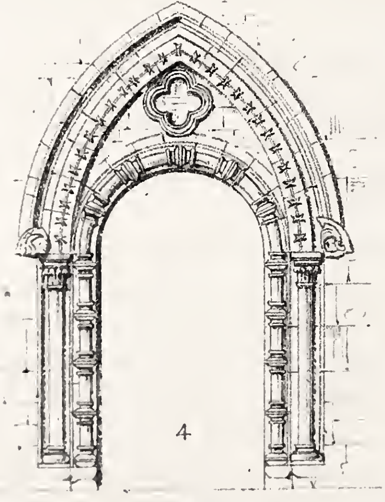

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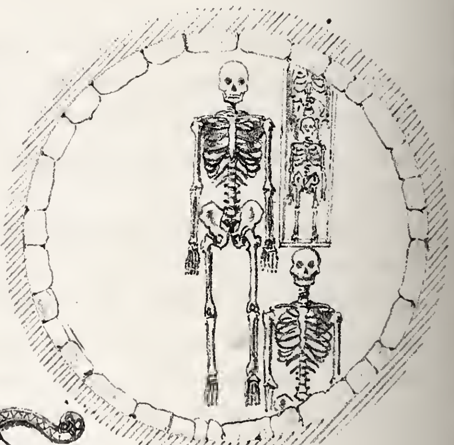

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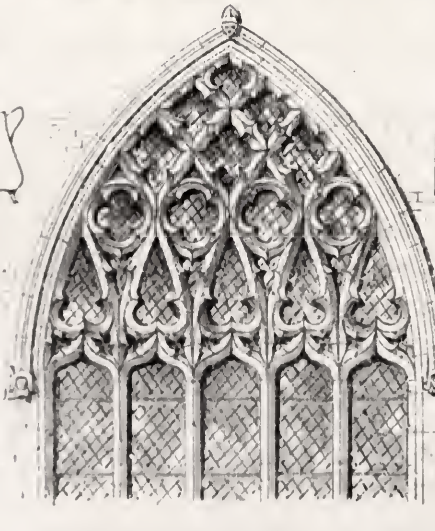

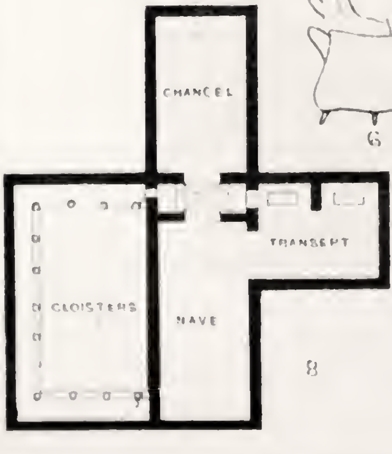

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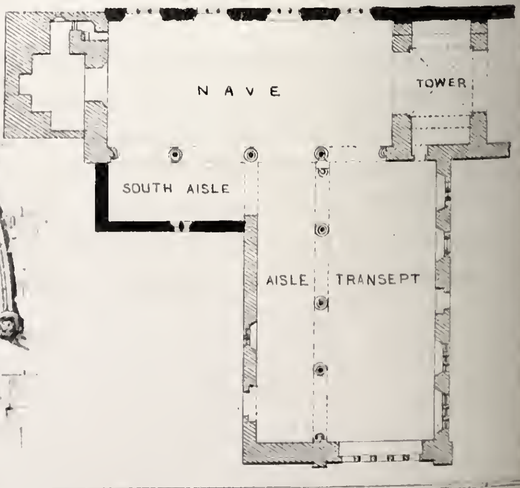

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numbered and used in the work. A complete arcade of arches runs round the two external walls, south and east. On the former there are nine lights, in groups of three, with three drop arches to the interior, with marble filleted pillars and carved capitals. To the east, six lights, grouped in pairs, with drop arches and pillars. This portion of the building will be used as chapter-house.

The small chapel, marked G on plan, is the parish church. This and the two side chapels have each their aumbry and piscina. On the south side of choir has been discovered the site of the sedilia: sufficient indications of the designs remain to enable it to be correctly restored. Higher up, beneath the side windows, are two recesses—the one an aumbry, the other a piscina.

The carved capitals to windows of the side chapels are interesting, as giving a certain weight to the theory put forward by Mr. Skidmore, that early English foliage takes its type from metal work. (See Fig. 3.) Each capital has its foliage bound round, as it were, with a hoop. These windows are being carefully restored, no stone being cast aside which can possibly be re-used in the work. On the walls of side chapels the original decoration has been discovered—scrollwork of excellent design in black, orange, and green, running under the wall-plate, the walls covered with what may be called an ashlar pattern. It is proposed to carry out the same mode of decoration in the new work. The roofs of the side chapels owe their design to the only remains of an early English roof I have seen in Ireland, that of Callan Church, removed some years since.

The roofs of the whole church are new, stone gutters having been used throughout, behind the parapets, which are embattled—the most usual finish for ecclesiastical buildings in Ireland; still, I am of opinion that such was not the original design, but probably dates from the fourteenth or fifteenth century, portions of tombstones of an early date forming part of their structure. Still, they are of sufficient antiquity, and nationality in their character, to make it desirable to maintain them. (See Fig. 2.)

The porch is interesting as having been, in 1478, the scene of the murder of Richard, the son of Edmond Mac Richard Butler, in revenge for a similar outrage enacted thirty-five years before under his direction. The mouldings of the entrance archway are very beautiful, and busts, which are introduced in the carving, exhibit as a fastening to the cloak what is now known in Ireland as the Tara Brooch. (See Fig. 7.)

On removing the pavement, several patterns of ancient tiles have been discovered, some of which have been forwarded to Messrs. Minton, with a view to their reproduction. The device is generally incised, four tiles forming the complete pattern, two glazed with a black glaze and two with a red. A scale pattern has also been discovered, all red. Several stone coffins have been brought to light; and an effigy, face downwards, forming part of the modern paving, has been revealed. On opening an ancient vault, which is supposed to have belonged to the Ormonde family, a leaden coffin was discovered. The profile of the body, having been copied in lead, formed the upper portion of the coffin; the under portion is shaped in such a manner as would have fitted into the hollow of one of the stone coffins which have been dug up. In this same vault a leaden urn, supposed to contain the heart of Viscount Mountgarret, was discovered.

In examining the ruins of Ireland, it is interesting to trace the influence of a particular architect, or band of workmen, in various districts. In Kilkenny I trace the workmen who were employed at Christ Church, Dublin, and probably at Boyle Abbey—the filleted shaft and writhed angle shaft, as in north transept doorway, are to be found in all three. (See Fig. 4.) In Co. Galway, the tracery of altar tombs and windows evinces that the same mind was there at work, if it was not executed by the same workmen. In Waterford, again, I see the handiwork of the Kilkenny craftsmen. In mentioning this, I do not wish to infer that one thing is a servile copy of another, but that there is sufficient to lead the enquirer to the conclusion that certain men carried their art from place to place, and were esteemed for their talent in architectural construction.

The general details of Kilkenny Cathedral are much simpler than is usual in English churches, owing to the hardness of the materials employed, and limited means; but the proportions, as in most Irish churches, are very good, and the simplicity and massiveness of the work give an idea of size which elaborate tracery, and multiplicity of mouldings, would not have produced. It would prolong this paper to unreasonable limits to enter into a description of the monuments and effigies of many noble families contained in this interesting building. One curious tradition I would mention connected with the device often used on tombs in Ireland, such as the implements of Our Lord's passion, representing the cross, pincers, crown of thorns, &c., in addition to which a cock is represented flying out of a pot—the tradition being that, when Peter denied Our Lord, the cock was supposed to have been boiling in a pot, and to have got out and crowed on hearing Peter deny Our Lord. (See Fig. 6.)

The work of restoration has been pressed on with vigour, and it is hoped that the Cathedral will be ready for service in about six months. The roofs are finished, the arches between the choir and side chapels opened, the prebend's stalls in hand; still, much remains to be done. The tower must rest in its present unfinished state until funds are collected for its completion. No pains or trouble will be spared by the dean and chapter to bring the work to a satisfactory conclusion. The chapter of St. Canice consisted of twelve members, of whom the dean, archdeacon, chantor, chancellor, treasurer, and two prebends *had* manse houses surrounding the Cathedral, the dean for the time being lord of the manor of the glebe. The vicars choral were a very ancient corporation, liberally endowed by Bishop St. Ledger, 1260, who gave them his manse and lodging. The vicars had a common hall and separate cells, read at meals, but were silent at other times, which shows the monastic character of the institution. The community consisted of four vicars (who were obliged to be priests), four stipendiaries, and four choristers. When a vacancy in the vicars occurred by the death of a vicar, the senior chorister, on being made a priest, filled his place. Considerable portions of the common hall still exist, particularly the gable end, which has a very interesting window.

At the north-west angle of the Cathedral Close is the library, founded by Bishop Otway, 1676. In mentioning the mode in which his bequest was to be expended, he enumerates "claims for every particular book." At the eastern corner of the south transept stands one of the round towers almost peculiar to Ireland, and so ably written on by the celebrated antiquarian, Dr. Petrie, whose theory that they are of Christian origin is, in my opinion, thoroughly borne out by the following facts. The tower, which is one hundred feet in height, was filled to a considerable depth with accumulated rubbish, principally the deposit of birds. This was removed, and on digging two feet below the outside level, human remains were discovered, contained in wooden coffins, placed partly under the foundations. The tower must have been erected on, or nearly on, the surface of the ground, which ground must have been a place of burial previous to its erection; and the position of the remains, with reference to the points of the compass, indicates that they were those of Christians. (See Fig. 5.) It is curious that a structure of such height, and small base, should have stood so well, resting on such a foundation.

PRIORY OF ST. JOHN.—The oldest monastic foundation in Kilkenny is the Priory of St. John, founded by William Marshall, the elder, Earl of Pembroke. In 1645, when the abbeys of Ireland were everywhere being restored, the Augustinians claimed their abbey; but the Jesuits, being the more powerful body, opposed the claim, and were confirmed in their occupation by Rinnuccini, the Pope's Nuncio. Dr. Ledwick states that a portion of the abbey was pulled down to make room for an infantry barrack. Sufficient, however, remains to show much of its original extent and beauty. Fifty-four feet of south side of choir is a continuous arcade of lancet windows, the largest pier being only nine inches wide. It is to be regretted that, in converting this ruin into a modern church, the windows have been cut down, especially the eastern one, and every second light stopped up. These ruins contain several monuments and effigies of great interest. The design of the chapter-house at the Cathedral was taken, evidently, from the choir of St. John's.

THE FRANCISCAN ABBEY, situated among orchards near the river, exhibits some interesting details. The east end is lighted by five lancets. The choir and tower of this abbey alone remain.

THE DOMINICAN ABBEY (for plan, see Fig. 8).—The Dominican or Black Abbey, founded by William Marshall, the younger, 1225, has lately been restored by J. J. MacCarthy, Esq., Architect, to whom I am indebted for the plan which accompanies this paper. It is interesting as showing how the simple form of the Dominican or Franciscan churches were added to, the most usual shape being two parallelograms, nave, and choir, sometimes with a narrow tower between. Frequently this tower is an addition. In the present instance, the usual addition of the two chantries has been extended to aisled transept and nave. The top of the tower is a particularly good specimen of crenellated battlement and truncated roof. (See Fig. 1.)

ST. MARY'S has little of its original architecture worth describing; the church has been completely modernized. Surrounding the church are several tombs of great interest, principally of the fifteenth and sixteenth century, belonging to the families of Archer and Shee.

THE CASTLE, the seat of the noble family of Ormonde, is beautifully situated overhanging the river. The plan originally consisted of four towers, with curtain walls between them, the entrance in the centre of eastern side, where lately the foundations of two minor towers were discovered. The walls are, in some parts, eleven feet thick. The vaulting on lower story has been turned on wattle centres, which never were removed; in some parts the basket work still adheres to the mortar above it. The several alterations which the Castle has undergone, to adapt it to modern use, have, as usual, obliterated much of the ancient character. Within the last few years considerable changes have been carried out, under my advice. The picture gallery (see photograph) is a fine apartment, 146 feet long by 28 feet wide, which, together with the rest of the castle, has had to be re-roofed. The painting of the gallery was entrusted to J. H. Pollen, Esq., who has been most successful in producing a beautiful work. The muniment room contains documents of the most valuable nature, which it is hoped may yet come before the public in some form of publication. It has taken many years to arrange these papers. The task was committed to the Rev. J. Graves, who has entered into the matter with all his heart.

THE HOSPITAL OF SIR RICHARD SHEE was founded in 1581 for the maintenance of thirteen poor people. The lands connected with this endowment have passed to others. The building, although in a very dilapidated condition, gives accommodation to several old women (who are fast dying away). It is not the intention of the present proprietor, N. P. O. Shee, Esq., to fill the vacancies until steps have been taken to repair the hospital, and place it on a better footing.

Throughout the town are many old houses of a domestic character which will interest the architect; and the surrounding country is full of buildings which will amply repay for the trouble of a visit—of which I may mention Kells, Jerpoint, Freshford, Thomastown, Gowran, Dunbrody, and, by extending a tour a little, Cashel and Holy Cross, &c., &c.

Professor DONALDSON, Past President, said it was usual, he knew, for the President or Chairman of the evening to invite members to offer such remarks as occurred to them on the subject of the paper read before them; but, as he was aware that their worthy Chairman had very considerable knowledge of this cathedral, he was sure the meeting would concur with him in requesting that he would be good enough to give them the information which his attention to this subject had put him in possession of. No one more appreciated the beauties of ancient architecture, and no one could better discriminate the different epochs at which the works were carried out. He therefore hoped he would favour the meeting with his observations on this interesting monument of ancient architecture.

The Chairman, Mr. G. E. **Street**, Vice-President, expressed his regret at the absence of Mr. Deane, because he, for one, would have been glad to have asked a few questions of the author of the paper. It was some years since he had himself seen this cathedral, and his stay in Kilkenny was not a long one. He had not been aware of the subject of the paper until late that afternoon; but, as he felt extremely interested in Kilkenny Cathedral, he made a point of attending to hear Mr. Deane's paper upon it. It was interesting, in the first place, as being a charming example of a cathedral on a small scale—very small indeed if compared with most of those in England. At the same time, it had a cathedral air, and was just such a structure as one might suppose would be adapted to our colonies in the present day. It was not on a scale that would be satisfactory in this country; for in size it was not larger than many of our large parish churches, though possessing considerable dignity and effect. Perhaps the most interesting point in connection with this cathedral was its thoroughly English style of architecture throughout, with the single exception of the parapets, which are all of the peculiar design which was so universal a characteristic of later Irish architecture; and he agreed with Mr. Deane, in the present instance, that they must have been an addition to the original structure. He had no doubt it was designed originally without a parapet, the roofs being of a very lofty pitch. The roof shown in the photograph was not of the original pitch, which resembled much more that which was shown on the aisles; and he imagined it must be intended to raise the new roofs to the old pitch. The same character of work would be found in other churches and buildings in the same district, particularly at Cashel and Ferns Castle (excluding, of course, from the former the most interesting, but thoroughly Irish, Cormack's Chapel); and, from his examination of the work, he had come to the conclusion that the architect who built Kilkenny Cathedral came either from South Wales or Somersetshire, for he had traced the works of the same architect on both sides of the Bristol Channel. The western part of the church was extremely simple in design, the arches being of the plainest kind, well proportioned, but simple almost to severity. The western window was a lofty triplet; and at the bottom, over the western door, there was a curious sort of two-light window inserted, which it was difficult to account for, except as a freak of the architect. He noticed in all the work of this part of Ireland a great love of the trefoil and quatrefoil, the inside arches, even of many of the windows, being trefoiled. The clerestory was remarkable: the windows were quatrefoil openings, and, if he remembered aright, over the columns, and not over the arches. The same arrangement is to be seen at Jerpoint Abbey, at a slightly earlier date, and it was not uncommon in English works. There was, also, another curious feature in this cathedral—that was, the mixture of two-coloured stones. He believed Caen stone was used when white stone was required, and the native dark limestone elsewhere. In the west door arch, there were alternate voussoirs of Caen stone and limestone, and the filling-in of the top of the doorway was a delicate carving enclosed in a quatrefoil. The shafts in the eastern part of the church were of Kilkenny grey marble, and generally very delicate in their proportions. He was very glad to find that one of the most unsightly things he ever saw—viz., a great wall which divided the tower from the chancel—was already destroyed. It was, when he last saw it, the most doleful church conceivable; and, to make it more doleful, there was a churchyard wall from ten to fifteen feet high, over which he supposed the poor Irish were expected to climb, in order to get even a sight of the Cathedral! As to the steeple, that was said to have fallen in 1332; but it was only as far as the belfry, he believed, that it fell. There was no drawing which showed the respent character of it; but his impression was that only the upper part of the steeple fell, and then the steeple was finished with the Irish battlement and groined. Reference had been made to the church at Batalha, said to have been built by the same architect in 1360. The groining here, like all the other Irish work of the same date, had a great deal of foreign character about it; but he had not seen Batalha, and could not say how far there was any evidence of similarity of character. Perhaps the most striking part of the church was the transept, which was very long, with lofty lancet windows on the side and end walls, and a very picturesque staircase turret on the west of the south transept. Altogether, he knew but few churches which, though so small and so simple in style, had struck him as being so valuable. From some of the dimensions he had in his possession, he had made one or two notes, which would be interesting to those who were curious in the proportions of these old structures. The columns in the nave were 21 ft. from centre to centre east and west, and 31 ft. 4 in. from north and south, and 10 ft. 4 in. high, so that the height was about half of the dimensions from centre to centre east and west, and one-third that north and south; and triangles inscribed on their bases seemed to give the height. He noticed that there was a great deal of dog-tooth throughout the eastern part of the church, and where there was any moulding it was extremely good of its kind. It was evidently done by workmen who were imported for the purpose. His own impression was that the battlemented work was done at the time of the repairs by Bishop Williams in 1660; but those more conversant with the earlier work might be able to say more about it. At Waterford he did not remember seeing marks of the same workmen, referred to by Mr. Deane, but his own evidence in that respect was of a negative character. There were two or three other churches mentioned in Mr. Deane's paper, on which he would just touch. The Dominican abbey, commonly called the Black Abbey, which had a tower placed on the south of the altar, in a most singular way: it had a rather fine fourteenth-century window at the west end. The plan of that church was extremely odd, and had evidently been obtained by adding to from time to time. It contained several very fine gravestones. Another church which interested him much was the Franciscan church, where the tower was placed at the east end of the nave, with a chancel at the end. The tower was much narrower than the nave, but exactly the width of the lofty arch which supports it, so that, now that the roof was gone, the construction looked extremely bold and hazardous. The windows in this church were extremely good. In conclusion, he remarked that the town of Kilkenny was one of the most interesting in Ireland, and would amply repay the visit of any architect in quest of good work. He believed, as he had said, that most of it was done by Englishmen, and it was therefore the more reasonable that English architects should go to look at it; whilst, in addition to it, many works of great interest were to be met with, at Jerpoint, Cashel, and elsewhere, in the same district. In fact, there was such a store of works that the only wonder was they had not been more studied by English architects than they had apparently been hitherto.

Mr. Gordon M. Hills, Associate, remarked that the Chairman had filled up all that could well be said upon this church, and he had touched on most of its peculiarities. Kilkenny Cathedral might be taken as about the third in rank of the Irish cathedrals. Limerick Cathedral was one which he considered remarkably grand in effect, notwithstanding the extreme simplicity of its architecture. In plan it is a cross church, enlarged into almost a square form by additions outside of the aisles, and which, moreover, are raised so high as to cover the original clerestory. As to the observation of the author of the paper with respect to the band of workmen whom he supposed to have travelled in the execution of these works, he did not think there was any good foundation for that supposition. His own belief was that Cormac's Church, at Cashel, consecrated in 1135, was the last important work of fixed date of the Irish before the English invasion. After that, there were two influences which produced another style. The first was the introduction, in 1148, of the Cistercian order of monks, and the first building erected by them was that of Mellifont Abbey, which, it is authentically known, astonished the people by its superior pretensions over what they had been accustomed to see. At Mellifont there are not now any remains of that work, though there is much that is curious of later date. The next work of the Cistercians of which they had an account was Boyle Abbey, much of which still remains in good order: and Cistercian work of about the same era is still to be seen at Jerpoint Abbey, Baltinglas, Manistex, near Croome, and other places. Boyle was referred to by Mr. Deane, and was executed by the Cistercians, and not, he (Mr. Hills) would conceive, by those who erected Kilkenny Cathedral, the latter structure having been built under the influence of the English invaders; and, as the invaders came from South Wales, it was not to be wondered that there was a resemblance between their works in Ireland and those found in South Wales. The banded shafts were remarkable, and they were found in many parts both of Ireland and England. Perhaps the most remarkable example in England was that at Walsoken, near Wisbeach, where the chancel arch has four small shafts in each pier, all banded five or six times in this manner. There were other instances of the kind in England, but that at Walsoken was additionally striking from its greater antiquity than any of the Irish examples. [THE CHAIRMAN: Romanesque, like St. Alban's.] The Franciscan Friary was one of a numerous class. He could mention, probably with ease, fifty towers which were erected in the way the chairman had described. The fact was, except the round towers—which ceased to be built when the English went to Ireland—and the low Cistercian towers, the Irish churches up to that period were almost towerless. In a few instances other towers could be named, as the fine massive one of the Trinitarian Friary at Adare; but suddenly, in the fifteenth century, it became the practice to build to the Franciscan and Dominican structures these lofty, slender structures. The nave was shut out from the choir by two transverse walls, placed close together, and pierced each with a narrow arch. Above the arches rose the slender tower, standing, as it were, on the apex of the gables, instead of spreading over the width of the nave. He remembered Professor Donaldson drawing attention to one of those towers at the Magdalen Tower at Drogheda, the remnant of a Franciscan or Dominican church: there were also two at Adare, one at Kilmallock, and at Rosserick, Moyne, Clonmines, Quin, and many other examples might be adduced. He thought, with respect to these peculiar Irish battlemented parapets, there was no doubt that at Kilkenny was of late date. And undoubtedly many other instances were equally late. The earlier method at Kilkenny it was not easy to determine, for, if a different method had existed, it had, so far as he knew, all been superseded elsewhere by this of late date. The people lived in the midst of war to a comparatively modern period, and it was always necessary to have and to renew means of protection round the building, which these parapets afforded, and which were not necessary for the same objects in this country.

Mr. J. P. SEDDON, Hon. Sec., said that the plan of Kilkenny Cathedral was almost identical with that of the Priory Church at Brecon, and that there were many other buildings in Wales very similar in character to those that had been described, possessing the same simplicity of detail and general proportions; and the banded columns and roll mouldings to which Mr. Deane had called attention as a feature in these Irish churches, found their counterpart at Margam Abbey in Glamorganshire, the west front of which, though sadly modernized, still possessed a fine triplet of windows, and doorway below banded in this peculiar manner. Another most interesting example of the kind existed at Strata Florida Abbey in Mid-Wales: this was so very beautiful that it was worth making a pilgrimage to. It was called the Crozier Arch, from the fact that the several zones or bands of the arch were continued on the face of the wall in the semblance of croziers exquisitely carved, in the character of the Transitional style, between the Norman and Early English, so highly characteristic of the western counties. In reply to a remark by Professor Donaldson, as to the entire absence of figure sculpture in these early works, the decorations being entirely confined to architectural sculpture only, Mr. Seddon mentioned that at

Kidwelly Church, in South Wales, between Carnarvon and Llanelly—which was a very fine structure, with a noble spire—over the archway in the porch to the nave he had lately seen a beautiful and most interesting statue of the Virgin and Child, sadly broken and dilapidated,and resembling the well-known Early French type; yet, nevertheless, it was doubtless true that figure sculpture was rare.

Mr. WILLIAM WHITE, Fellow, had seen many of these works which had been referred to, and it was to be regretted that they were not more visited than they appeared to be. He would add one word to what the Chairman had said as to the beauty of these Irish memorials. It was to be remarked that, with all their simplicity, most of the Irish structures of that date exhibited a wonderful grace of proportion, more so than many of our own works, and they were equally remarkable for that exceeding simplicity. He apprehended, however, that the Chairman more especially referred to the geometrical proportions of the buildings. Several of the earlier buildings in Ireland, which exhibited the greatest beauty of proportion, appeared to have followed accurately several of the proportions used in their earlier and ruder works. And these proportions were of a somewhat remarkable character, produced in a way that could not possibly have been accidental, and could have come only from their following a definite system. He had, from the study of these remains, arrived at certainties on several points which had been of interest and value to himself. But he wished to say one word with reference to the parapets. It appeared to him that this building was originally designed to have a parapet. The character of the whole work appeared to him very much as if this was intended, although, from a slight difference perceptible in the work, it was probable they had been rebuilt. But he did not think they were wholly additions. What these had been there was nothing to show; but he had seen a number of instances of the Irish form of parapet which seemed to him as early, and in some cases almost earlier than the date of the building on which this particular parapet was found.

The CHAIRMAN remarked that there was the old corbel table at the bottom of the parapet.

Mr. HILLS repeated his impression that it was a modern parapet.

The CHAIRMAN added that there was not a bit of old stone in it; it was made up of plaster.

Professor DONALDSON then proposed a vote of thanks to Mr. Deane for his paper.

Mr. THOMAS MORRIS, Associate, said he had listened with great pleasure to the reading and discussion of this paper. It afforded, he thought, an allowable opportunity of remarking that the recent publication of the new catalogue revealed many deficiencies in their library. Amongst them might be mentioned, as particularly relevant to this subject, the late Dr. Petrie's work on the "Ecclesiastical Antiquities of Ireland." It was a work of great learning and value; and, although the "Round Towers" formed the staple subject, it went largely into general questions of ecclesiastical architecture. They had lost Dr. Petrie himself, but it was not perhaps too late to obtain a copy of his very serviceable and finely-illustrated book. He hoped, at some time or other, his theory of the round towers would be overturned; but he thought, nevertheless, the work was one of great value, and would be very useful in the library of the Institute.

The vote of thanks having been unanimously accorded to Mr. Deane, the meeting adjourned.

ON THE CHURCH OF ST. STEPHEN, OR THE "ABBAYE AUX HOMMES," AT CAEN.

[Continued from page 126, Volume for Session 1862-63.]

By J. H. Parker, F.S.A., Hon. Member.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, February 26th, 1866.

On a former occasion I described the Romanesque portions of this celebrated church, consisting of the nave and transepts and the west front. I was then requested by your secretaries to complete the history of the church by adding the Gothic portions which comprise the choir with the apse, and the spires. I thought it necessary to visit the church again, for the tenth time at least; but I have never been able to satisfy myself respecting the history of this part of the building, and am still in some doubt as to what period to assign this work. In the entire absence of documentary evidence, and in the face of a tradition which is manifestly erroneous, it is only by comparing it with several other buildings of the same province, corresponding with it in style, and endeavouring to trace the progress of one by the help of another, that we can hope to arrive at any satisfactory conclusion. Notwithstanding the number of works that have been published on the architecture of Normandy, very little has really been done to elucidate the history of these interesting buildings, for which, with a few exceptions, the dates are still entirely wanting. There is, however, one exception, which is important for our present purpose. The cathedral of Lisieux may fairly be said to be of ascertained dates; the names of the bishops under whom the different parts were built are recorded in the 'Gallia Christiana,' and these dates have been well applied by the local antiquaries. It is much to be wished that the keepers of the archives (*Les Archevistes*) in other cities of France would bestow the same attention on the history of their buildings as has been given to Lisieux by the late M. Farolet. From his researches it is established that the former church was destroyed by fire in 1136, and the present one was built between 1141 and 1182 under Bishop Arnault, and the choir rebuilt or enlarged between 1226 and 1253, after another fire, under Bishop Willian du Pont-de-l'Arche, who founded the three chapels at the east end round the apse, the central one of which was rebuilt and enlarged for the Lady Chapel in the fourteenth century.

The present nave of St. Peter's at Lisieux, formerly the cathedral, may therefore fairly be attributed to the latter part of the episcopate of Bishop Arnault, or from 1160 to 1182, and as this church is one of the best examples in Normandy, the latest phase of the transition from the Romanesque to the Gothic style, this date is very important for comparison with other buildings like St. Stephen's, at Caen. The work corresponds so closely with that of Sens and of Canterbury, both of which were building at the same time, that there is really no difference of style; we cannot say that one is at all in advance of the other. This enables us to establish a starting point for our researches into the comparative progress of the early Gothic style in the three countries, and it is a very interesting investigation to endeavour to discover which had the priority in each successive change of style, and which borrowed ideas from the other. It is perfectly clear to those who have investigated the matter, that every nation developed gradually a style of its own, just as distinct, and in the same natural manner as its language, and therefore the architecture of each nation was as distinctly national as its language. But just as each borrowed words and ideas from its neighbours, so did it borrow architectural details. All started from the same point, the Roman, and each continued to imitate the Roman buildings,* without much essential variation, though not without very marked provincial characteristics down to about the year 1180, or at least until the middle of the twelfth century. Whether the change of style began at an earlier period in one country than another is a much disputed point, but it is clear that these three buildings are so much on a par, and so nearly of the same date, that one may safely say that from this point the three nations started fair in the same race. In England, the progress during the last twenty years of the twelfth century was wonderfully rapid, from the corona and the transepts of Canterbury in 1184 to the choir of Lincoln, the presbytery of Rochester, and the galilee of Ely, all before 1200; the progress, although not unnatural nor improbable, was such as to show the wonderful energy and activity of the English people at that period. It is very questionable whether the progress was equally rapid either in France or in Normandy, when the facts are closely investigated, although it has long been usual to consider that England was always behind the continent, and borrowed all its ideas from thence. My present object is to explain and illustrate the Gothic portion of St. Stephen's, at Caen; but this can hardly be made intelligible without examining the early Gothic of Caen and its neighbourhood, which may fairly be called the early Gothic of Normandy, for this is the district in which it is found most pure, and less mixed with that of other countries. On the banks of the Seine, as at Rouen, it is mixed with the Parisian style, or more correctly the style of the *Isle de France*, of which Paris was the capital. In the southern parts of Normandy it is mixed with the styles of Anjou and Maine, and and in the sea ports with the English, as at Eux, but in Calvados we have the early Gothic of Normandy in all its purity, and a very beautiful style it is, equally distinct from the English and the French; and I do not think that an examination of the dates, as far as they can be ascertained, or the progress of the styles, will bear out the assumption that the early English Gothic was borrowed from Normandy. The style of the choir and apse of St. Stephen's at Caen, evidently comes between the nave and the apse of Lisieux, the latter being pure Norman Gothic, and in the opinion of the best Norman antiquaries the date cannot be put before 1200, and between that and 1220 is the probable date. The only vestige of the Romanesque style is the use of the zigzag ornament in the mouldings of the arches of the choir, and perhaps the very singular use of plain segmented arches to carry the vault of the triforium gallery, partly enriched by the ornamental heads of the arches of the arcade in front of them. This is a clumsy piece of construction, which would hardly have been used after the Gothic style was established.

It is time to enter more into detail in the description of this interesting edifice. Of the original choir of the eleventh century nothing remains visible, but by a very careful examination in the roofs of the aisles above the vaults of the triforium gallery, in which I was accompanied by M. Bouet and M. Cordier, we found just sufficient vestiges remaining against the wall of the central tower and transept to show that the plan of the original choir was the same as that of the nave, having a vaulted triforium gallery of the same style as the present one, for a small portion of the early vault still remains. This choir was no doubt short, with an apse according to the custom of that period, and it was entirely removed to make room for the present choir. Along with the choir, the apse with the apsidal chapels, and the aisles, the chapels on the eastern side of the transepts were also rebuilt, and the one belonging to the south transept, now used as the sacristry, remains in good preservation, and in a more genuine state than the rest of the church, having escaped the present mis-called restoration, which here means

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* Probably that variety of the Roman style which is called Byzantine, and especially that branch of it which had been worked out in Syria, and drawings of which were brought home by the Crusaders, had considerable influence on the ornamentation of the Romanesque styles of France, Normandy, and England. The recent valuable work of the Count de Vogüé throws much new light on this subject.

scraping, to which all the rest has been subjected. While we cannot help lamenting this vile practice of scraping the surface of the old masonry, which entirely destroys its original character and the tool-marks of the early masons, which are often very important for tracing the history of the buildings, we must at the same time give the Normans full credit for the great care and skill with which all the necessary repairs have been effected. It is difficult to believe at first sight that a large part of this church, and especially of the choir, is really the work of the seventeenth century, and yet it is perfectly certain that such is the case. The church narrowly escaped being entirely destroyed by the Protestants under Coligny, and a considerable part of it was actually pulled down by them, and restored at the expense of the abbey about sixty years afterwards. The best proof of this is that the builders' accounts are preserved among the archives of the town, and the orders given by the monks that the original work should be copied as faithfully as possible. These orders were obeyed very conscientiously to the best of the ability of the workmen, but a careful examination, with the assistance of the keen eyes of my friend M. Bouet, has enabled me to detect all these real restorations, and the changes that have subsequently been made in some parts.

The engravings published by Pugin and Cotman, and others, and the excellent drawings of M. Bouet, several of which have been engraved as illustrations to this paper, will give you a better idea of the plan and arrangement, and the details of this beautiful choir than any verbal description can give. But the manner of working the surface of the stone, and the width of the joints between the stones are seldom attended to in any drawing or engraving; and as it was shown in describing the nave of this church, that these minute points are sometimes very important in tracing out the history of the fabric, they must not be overlooked in the choir, where they are of nearly equal importance in distinguishing the work of the thirteenth century from that of the seventeenth. On the surface of the stones of the twelfth century the marks of the hatchet are in diagonal lines: in those of the thirteenth the lines are nearly horizontal, and worked with much care: in those of the seventeenth the surface has been smoothed with the scraper, which has been mercilessly applied in modern times on all the parts that are exposed to view. The joints of mortar in the thirteenth century are of about the same width as those of the twelfth, but the edges have been grooved with an iron tool, so that they are slightly hollow instead of projecting. In the modern work no care is bestowed on this matter, so that the manner in which the joints are finished is a safe guide to the dates of the different parts of the work, which are sometimes mixed up together in a very intricate manner. The vaults of the choir and of the triforium gallery were almost entirely rebuilt, and the bosses at the junction of the ribs of the apses bear the arms of Charles D'O., who was abbot from 1582 to 1620, and of other dignitaries of the abbey at the same period. A careful examination shows that the mouldings of the ribs are shallow and more slender than the original. The north side of the clerestory was entirely rebuilt. The roofs of the aisles of the choir above the vaults have been three times altered. They were first covered with lead, which was stolen by Coligny, then with wooden shingles, and afterwards with tiles. These changes caused also a difference of level, and caused the alteration of the windows of the triforium gallery, which were made circular to suit the higher roof. Those at the extreme east end were, however, always circular, and one of them has preserved part of the original tracery. The external arrangement by which the parapet and the allure, or rather the gutter, of the semi-circular apse, is carried on arches across the intervals between the apsidal chapels, should be noticed as one of singular elegance, and having a most picturesque effect.

I have mentioned that there is an erroneous tradition respecting the date of the choir, but I think that M. Bouet has hit upon the true explanation of this tradition. The confusion arises from the double meaning of the word choir, which properly signifies that part of the church in which the chorus are accustomed to assemble to chant the service; this being usually the eastern limb of the church, the name has come to be applied to that portion of the edifice, but the two are not necessarily identical. In many churches in Italy, and especially in Rome, the choir or place for the chorus is moveable, and is changed at different seasons of the year. In England and in France it frequently extends across the transepts, and includes one or more bays of the nave; this was the usual arrangement in cathedrals, and it has been applied to many parish churches with great advantage. In St. Stephen's, at Caen, during the great repairs of the eastern part of the church in the seventeenth century, a chapel on the north side of the nave was fitted up for the use of the chorus, and continued to be used as a choir for above a century: hence the monks became accustomed to call this chapel the choir. This chapel was built by the Abbot Halbout in the fourteenth century, and is still known by the name of the *Chapelle Halbout;* it was therefore quite natural for the monks to say that their choir was built by the Abbot Halbout, for this was true in their sense of the word choir, but this tradition was afterwards misapplied to the eastern limb of the church. This chapel of Halbout is not without interest for us, though it has been much altered and spoiled. The vault is modern, and of plaster only, but in fair imitation of the old one. The side windows are flamboyant work of the sixteenth century, but the east window is either original or a careful copy, and is of the form usual in the fourteenth century in this part of France; and this is important for our purpose in studying the comparative progress of the art. The tracery consists entirely of foliated niches, almost identical in pattern with those of the Chapter-house of Westminster, which Mr. Scott has proved by documents to be of the middle of the thirteenth century. The same form occurs in the Chapter-house of Salisbury, a very few years after that of Westminster, and it is common in England in work of about 1260. It is used also in the Sainte Chapelle, in Paris, at the same time as at Westminster, but that is considered by all French antiquaries as an exceptional building, very much in advance of other buildings of the same period; and this form of tracery is considered as characteristic of the fourteenth century over the greater part of the north of France, while in England it belongs usually to the latter half of the thirteenth.

Perhaps the most striking feature of this remarkable church consists of the spires, especially those of the west front, which are amongst the most elegant of the many very elegant spires for which the early Gothic of Normandy is celebrated. There are on St. Stephen's church altogether eight spires, including those upon turrets as well as those on the larger towers, and this beautiful group of spires gives an admirable effect to the church at a distance. They are not all of the same period, nor of the same importance: the earliest is on a stair turret of the north transept; it is octagonal, and belongs to the later Romanesque work, or soon after the middle of the twelfth century. The next are two pairs belonging to the early Gothic work of the choir, and show this to be a little earlier than the western spires, as their character places them clearly between the early one and those at the west end. They are square rather tall pyramids, with mouldings on the angles, and a finial, and are amongst the earliest Gothic spires, rather solid and heavy when compared with the later examples, but much lighter and more elegant than the earlier Romanesque spires which abound in this neighbourhood. Those at the west end are, however, very superior in lightness and elegance, with pinnacles of open work at the angles and in the centre of each face. These spires are themselves light, slender, octagonal structures, rising from the tall square towers of the earlier period, and are quite models of early Gothic spires. The northern one is rather earlier than the southern, and the pinnacles not quite so light and open, but neither are they so *bizarre*, for notwithstanding the light elegant effect, it must be acknowledged that the triangular pinnacles of the southern spires are a singular caprice, and not a good construction. They have had to be renewed several times, the last time within the last twenty years; but the original design has been faithfully copied, though the details cannot be depended on. These are amongst the earliest Gothic spires, and probably date about 1230. Caen has two other spires; the celebrated one on St. Peter's church, a very elegant and beautiful example of the beginning of the fourteenth century, octagonal with openings pierced in the flat sides, and mouldings on the angles and inner pinnacles. The remaining one (St. Saviour's) is later, and not so good. It should be observed that in nearly all the spires in this district the surface of the stone is cut to imitate wooden shingles or tiles, a clear proof that there were earlier spires of wood from which these were copied; indeed there is little doubt that all the Norman towers either had or were intended to have spires of some kind. The frequent burning of the wooden spires, and the natural decay of the material in such an exposed situation has caused them to disappear, and in England the towers have gradually been left with their square tops calling in vain for spires. In this part of Normandy, where the building stone is so abundant, and so easily worked, stone spires were very generally introduced in place of the wooden ones.

I am very much inclined to believe that Europe is indebted to Caen and its neighbourhood for that very interesting feature in Mediæval architecture—the Gothic spire of stone. I know of no other district in which we can trace such a series of steps leading up by a natural succession and progress to this object, as the pyramids which form a common termination of the church towers of this neighbourhood. Beginning with the very remarkable and curious low pyramid of Than, which may fairly be assigned to the end of the eleventh century, we can here readily trace the successive changes at intervals not exceeding ten years from each other, in a series gradually becoming more lofty, better executed, and evidently later in character, until we come first to the square spire and then by a natural and easy transition to the octagonal spire with its group of pinnacles and spire lights (*lucarnes*) at the base. To begin then with Than: in this remarkable structure the surface is not made even in one gradual slope as was afterwards the case, but the pyramid is built in a succession of steps with the angles chamfered off, and within the stones are not cut, but left rough and overhanging one another, like the Irish cairns and beehive houses, and at the base of the pyramid a large piece of timber was introduced, like the wall plate on the top of a wall, as if to bind the tower together, and make a secure base to construct the pyramid upon. This timber has now entirely decayed, and has left only the opening in which it was placed, which must tend materially to weaken the structure; the upper part of the pyramid also has long been destroyed, and leaves an open hole to admit the rain, as into a well. I am rather surprised that the excellent French Society for the Conservation of Mediæval Buildings (*Monumens Historiques*) (of which I have the honour of being a member,) has not given its attention to this curious structure. The next pyramid in date is probably that of Comornes, near Bayeux, which is in a tall tower possessing some curious features of quite the beginning of the twelfth century or the end of the eleventh. The pyramid itself is low and very early looking. It is built of ashlar, the upper part has been repaired, and has unfortunately had a window and a bell put on the top. The next which occurs to me is Basly, near Caen, which belongs to near the middle of the twelfth century, and Rosel which follows very soon after. These are simple pyramids without any corner pinnacles; the latter has a round moulding on the angles, a finial, and spire-light.

Huppeau, near Bayeux, may come next. It is considerably taller than those that have gone before, but appears to be nearly, if not quite as early. It has a large roll moulding on the angles, and the surface is cut in imitation of shingles. At each of the four corners is a sort of rude large crocket, the lower edges of the pyramid resting upon a corbel table, as is usually the case, and these corbels are very rudely carved, but the cutting is deep. Vaucelles, in the suburbs of Caen, has been repaired, but copied with tolerable fidelity, and belongs to this period. St. Loup, at Bayeux, which has been engraved by Pugin, is another very fine example of this class. St. Contest, near Caen, has also had the pyramid rebuilt in modern times, but faithfully copied, and may be classed here. Bony is a fine example of transitional character, which may be called either a very tall pyramid or a square spire; it has no corner pinnacles, but has lucarnes in the centre of each face.

Douvres may be taken next: it is octagonal, but very early, quite of transitional character and stands on a tower of the same period. The small square spires at the east end of St. Stephen's, at Caen, have been already mentioned, and should perhaps come before Douvres. Ducy is a very elegant lofty octagonal spire with square pinnacles, and is a little earlier than the western spires of St Stephen's, Caen.

The spires of the Cathedral of Bayeux are so much of the same character as those of St. Stephen's, Caen, that they were probably building at the same time. They are not equally elegant, and the corner pinnacles are not so open, which gives them rather an earlier appearance. Secqueville has a fine spire of nearly the same character, possibly a little earlier, having no corner pinnacles, but it has lucarnes, and these correspond closely with the others.

These are all the examples which occur to me as leading up to, or contemporaneous with, those of St. Stephen's, at Caen, which it is my object to illustrate by this brief comparison. A few words should perhaps now be added on the later spires of the same district.

Those of Bretteville, Bernières, and Langrunes follow in this order, and bring us to about the middle of the thirteenth century. They are all admirable examples of elegant design and wonderfully light construction, and each is of itself a study for a young architect. After these come the unfinished spires of Norrey and Aubrieu, which bring us to the end of the century. Norrey is one of the most beautiful of this district of beautiful churches; it is often said to be copied from St. Stephen's, Caen, but is almost an exact copy of the Cathedral of Bayeux* on a small scale, quite a little model of a cathedral. It was intended to be made far more rich on the exterior, but was never completed. The small portions that are finished are exquisite pieces of Gothic detail and carving, but it is of considerably later date, near the end of the century. The spire was never completed, but it is carried above the top of the pinnacles, which are finished, and show what it was intended to be. At the east end a whimsical fancy has been introduced: the two apsidal chapels have each a half spire carried up for a roof, so that they look as if the two had been split asunder, and ought to be joined together again. The effect is very bad, and even ludicrous, and this seems to show that when the architect deviated from his model he was not to be trusted, although the workmen possessed wonderful skill.

This brings us to the spires of the fourteenth century, of which St. Peter's, at Caen, is the favourite type, and which is commonly quoted as the perfection of a spire, although some prefer the earlier type, of which St. Stephen's affords the most perfect example. The spire of St. Saviour's, at Caen, would rank very high if it were not so near to St. Peter's, to which it is not quite equal.

In a very ingenious and clever essay by M. Cordier, of Caen, published in the 'Bulletin Monumental' for 1862, he endeavours to prove that the mode of construction, commonly used in Normandy and in England in all large Gothic buildings, with a double wall, is of Norman origin, and almost peculiar to the Anglo-Norman buildings. It is certainly used in Gothic buildings in other parts of France, but whether it was used at so early a period in other provinces is a question deserving of investigation. By a double wall is meant that mode of construction which consists of an inner and outer casing of ashlar, with the interval filled in with grouting, which afterwards becomes a concrete mass, and with passages left at intervals, which do not affect the strength of the wall. The inner casing carries the vaulting, and the outer casing the outer roof. Openings are left in both the outer and inner casing for the doors and windows, and the triforium arcade, but with this difference—that in the clerestory the opening of the inner casing is larger than in the outer one. In the triforium arcade this is reversed; the inner face of the wall being here the one most exposed to view. The larger opening is made at this part in the

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* The church of Norrey did not belong to the abbey of St. Stephen's, at Caen, but to that of St. Ouen, at Rouen; it was therefore more natural to copy the cathedral of the diocese than the great abbey church, which was in some degree a rival to it.

gallery, and is covered by one wide arch instead of being divided as in front. These openings are usually made to correspond so well, that the fact of their having to be made through what may be called in this sense two distinct walls escapes observation; but it is only natural that in the earliest Gothic buildings, before the masons had become accustomed to the new style, these openings should not exactly correspond, that the effect from different points of view had not been sufficiently studied, and some awkward arrangement should be produced. This is precisely what has occurred in the choir of St. Stephen's, at Caen. In the clerestory the outer openings are double, forming two lancet windows coupled together. The inner opening is wider than the two outer ones combined, and has a trefoil arch, but the head of this arch is not high enough to clear the heads of the outer windows, and cuts across them in an unusual manner. Shafts were also carried down from the front of the trefoil inner arch, across the lights of the outer windows, an arrangement which never occurs in later work after the plan was understood. In the triforium gallery this defect is still more strikingly displayed. The large arch in the outer wall of the choir is segmental, and so low that it comes down quite to the springing of the pointed arch, and leaves a blank wall behind the ornamental work in the head of the triforium arcade, and is distinctly seen from the choir, forming quite a blot in this beautiful design. This low arch carries the vault of the triforium gallery, or the *tribune* as the French call it; and although a large part of that vault has been rebuilt in the seventeenth century, I have satisfied myself after long and careful examination that it has been faithfully copied, and that part of it is original. These arches, especially the springing stones of them, form part of the original construction, and they carry the outer wall of the clerestory. The courses of stone and the joints of the masonry in this case prove them to belong to the original structure, although I was very unwilling to believe it, and was long before I became convinced of it. But M. Bouet showed me that the same arguments by which I had reminded him of the changes that had been made in the construction of the nave were equally applicable to the choir; and the courses of stone, and the distinct character of the joints of the masonry of different periods are arguments that there is no evading when carefully examined on the spot.

The mode of construction with double walls filled in with grouting is a matter of some interest to trace to its source. The Romans did not employ it. Their walls, it is true, are often faced with brick or with ashlar in small cubes, sometimes on the exterior only, more frequently both inside and outside, but the strength of the walls does not in the least depend on the facing, and the interior is more commonly plastered only for the purpose of receiving mosaics or frescoes, or is ornamented with slabs of marble, or with stucco, or with bronze. In Rome itself, and in a great part of Italy, the walls are almost entirely constructed of rubble or concrete, either of broken brick or rough stone, merely faced with cut stone or marble. In England and in Gaul the Roman walls are commonly built of rough stone with grouting, but banded together with layers of tiles at short intervals, and it is evident that the Romans depended more on their tiles or bricks for the strength of the wall than on the stone, and that the facing had nothing to do with the strength of the wall. In Mediæval walls this is reversed; the strength of the wall depends upon the ashlar, and although the grouting often became a concrete mass, this was usually accidental. Double walls with passages in them could not stand if the ashlar was removed. In some cases, indeed, where the walls were very thick, and had a passage in them, and the lime, being burnt on the spot, happened to be very good, the concrete mass remained as a rock long after the ashlar has been removed, as at Reading Abbey, but this was never the intention of the builders. The double walls of the Middle Ages were intended to form one whole, and appear to us almost a necessary part of the Gothic construction, although it is certain that the walls of Gothic buildings are not always so constructed. The interior is sometimes left rough and covered with plaster, and in country churches the exterior also, the walls being built of rubble only. But the double wall is clearly the more scientific construction, and the question is, when did this originate? We have it in Normandy, in the walls of the abbey church of Bernay, in the first half of the eleventh century, and at Caen, and in the Tower of London in the latter half of the same century. Was it used in other countries at the same period? A number of instances may be cited to the contrary, but these prove nothing. Double walls were of all periods. The passages in the thickness of the wall are the best criterion whether this mode of construction was understood or not. Do they occur in the buildings of other countries in the eleventh century in the same manner as they do in the Anglo-Norman buildings?

PROFESSOR DONALDSON, Past President, said they were extremely obliged to Mr. Parker for this paper, and he had listened to it with great interest, as some years ago he (Professor Donaldson) had read before this Institute a paper upon Caen, and on some of the churches mentioned by Mr. Parker. They were very greatly indebted to gentlemen who had leisure and disposition to bestow so much time in the investigation of a subject like this, for professional men engaged in the pursuits of their practice were not able to devote that time in fully carrying out such investigations. There were various points touched upon in the paper which were very suggestive. With respect to those hollow walls, it appeared to him that the great principle on which they were constructed was to get stability with less material. If they had but the same quantity of material in one thickness the wall would be wanting in that stability which was necessary to sustain the pressure which the vaulting produced upon these supports; whereas, having two thin casings, and extending the base, strength was given to resist more than would be the case with the same walls in only one thickness. With reference to precedence of style in France over that of England, his disposition was to give preference to France by about a quarter of a century; and there was in the second volume of the 'Transactions of the Institute' a paper by Mr. Poynter, in which he drew a parallel, and prepared a table showing that the buildings in France were many years in precedence of those in England. When they commenced with the Saxon period in England the style was very rude and rough; it carried out a certain amount of sentiment, but was wanting in that delicacy and finish which was introduced by the Normans after the conquest in 1066, when William came to England. After that event they found a great appreciation of nobility and beauty of form, and disposition of masses, and the greater minuteness and delicacy of details in the Norman architecture. He could not find that specialty of sentiment and feeling and expression which were considered by Mr. Parker as very distinct and different between the early pointed periods of England and of France; and looking to our best works, they seemed almost all reflections of those produced in France, which he attributed to the circumstance that the architects brought over to this country by distinguished prelates from France, (who then filled the most eminent positions in England), introduced into this country a style of architecture which was applied to some of the most elaborate buildings of that period, and tended to the diffusion of the Early Pointed in place of the Norman. It was his impression—although he might be mistaken—that the French had precedence of ourselves in respect of the introduction of new styles of architecture up to the fifteenth century. Then the divergence was evident. The English architecture of the Tudor period possessed an individuality quite distinct from the flamboyant style of France. They were much obliged to Mr. Parker for bringing these facts to bear upon such curious points in vindication of the architecture of our country. With respect to the construction of the concrete central walling there were some fine specimens of that construction in this country, and perhaps none more so than was to be found at Rochester Castle, where even the steps of the staircase were formed of blocks of concrete. There was no regularity of arching, but mere masses of concrete roughly and rudely built, held together by the goodness of the mortar and the material of which they were composed. Altogether the construction of these buildings, and Gothic buildings generally, did not show sound, substantial and correct principles of construction. They found the casing carried out very beautifully, but the squared blocks of construction carried throughout the mass of walling was not found as in the Greek and Roman works of the classic period.

The Gothic architects carried up vast piles and combinations with great skill, but in what should be solid and substantial construction, great weakness was too often found. There was a core of rough construction, faced with masonry, but not bonded into the heart of the work in regular courses, and it was this combination of different materials which caused those cracks and fissures which were unhappily found in many of the ancient buildings so constructed. He would conclude by proposing a vote of thanks to Mr. Parker for his very interesting paper.

Mr. WILLIAM WHITE, Fellow, had great pleasure in seconding the vote of thanks to Mr. Parker, and begged to offer one or two observations on this subject; more especially as he took a different view from Professor Donaldson as to the similarity of the development of styles of the two countries. He had looked into that development from time to time, as opportunity had occurred, in all parts of our own kingdom and of France, and it seemed to him that the Norman architecture of France had a character to itself which no other had. It was very special in its character, and though perhaps it was very difficult exactly to define wherein the difference consists, yet the round mouldings and hollows were found to be of a different character from what obtained in our own country. Though very much the same in style, it varied in several respects from the English style of the same period. Then again, the semi-circular arch of the Norman architecture was continued much later than in our own, as also the square abacus and the peculiar type of foliage which prevailed with it in the bell of the capital. But it did not seem strange that such characteristics should be confined to the separate localities and countries, inasmuch as it was so very evident, he thought, that the different developments of style, in the different countries, from the Romanesque, which took place according to Mr. Parker's paper, were effected by the simultaneous working of different sets of men, who working as they did from the same original data, worked alike up to a certain point, and from that point onwards again. Therefore it was so much was similar in the general form of development, though in different countries the minutiæ and the details took a peculiar form, according to the habits and traditions of the local workman. He thought a great deal of the small detail was traceable to the peculiarity of the workman or sculptor himself. That was a point quite clear to his own mind, but he hoped the discussion would be continued by other members offering remarks on this question.

Mr. G. R. BURNELL, Fellow, remarked in confirmation of Professor Donaldson's view of the development of styles in France, that he met with a singular instance of the development of the Norman style in the church of Verneuillet, Seine et Oise, which was situate on the Paris and Rouen Railway, about six or seven miles from Poissy. In that church there was a remarkable specimen of the interlacing of the circular arches, which was precisely like the interlacing of the circular arches in the round tower of the Temple Church. Whilst he was making an inspection of that church he was accosted by a shopkeeper living in the neighbourhood, who asked him what date he put upon that church. He, of course, carrying the date of the Temple Church in his mind, told the man he thought the date was about 1260, when the shopkeeper replied that it was 1220. He mentioned this fact in confirmation of Professor Donaldson's opinion that the architecture of France generally preceded the architecture of England, at any rate until the introduction of the Tudor style. He might mention one peculiarity about the spires of Normandy. Almost all of them were executed in thin slabs of stone; they were all about seven inches thickness at the bottom, and about four inches thickness at the top, and they were almost all executed in the Creuilly stone. In Caen, especially, which is situate upon the great oolite, they used the Creuilly stone in their steeples, which was obtained about twelve or fourteen miles from the town of Caen.

Mr. BURGES, Fellow, inquired whether the joints were horizontal or cut at right angles to the face.

Mr. BURNELL was not quite certain, but he thought they were at right angles to the line of the slope of the steeple.

Professor Lewis, Fellow, (responding to the call of the President), expressed his regret at the cause of Mr. Parker's absence from England. There was, however, reason to believe that his time would be well occupied in Rome in working out on the spot the history of the remains of the Christian basilicas there, and such a man as Mr. Parker, with the actual materials of his work on the spot, could not fail to produce results of great value; therefore, though they regretted his absence in one respect, they might have cause to congratulate themselves on the work which that gentleman's enforced absence would give them hereafter. He thought the vote of thanks proposed ought to include his friend the Hon. Sec. for his kindness in reading the paper. In reference to the subject brought before them this evening, he would say he did not quite understand the view which Mr. Parker had taken about the double walls and the distinction between the Mediæval wall and the Roman. The Mediæval depended no doubt to some extent upon the stone casings, and so did the Roman, although probably not to the same extent. The casing of the Roman walls was often very strong, with rows of long bricks inserted, tying it with the body of the rubble in a very strong way, and the two were thus bound together even more, probably, than were the Mediæval walls. There was a vast number of Mediæval remains to show that the rubble hearting of the walls, where cased, was depended upon, and much of it was quite sufficient to leave a very solid wall when the external casing was stripped off; in fact, to bear the whole weight of the structure quite securely without the casing. A case of this kind of construction was to be seen in the Château of Falaise, for example. Two or three years ago he noticed that the casing of a large portion of the walling was gone, but still the walls remained solid, with scarcely a settlement, and the hearting was as strong as any concrete they could conceive. Numbers of cases of the same sort would occur to every one no doubt of any experience in Mediæval work: and there were examples in Roman (Reihburgh for instance) where the Roman hearting was very bad. With respect to the spires, he agreed with Mr. Parker that the Normans would seem to have been their chief designers. There were numerous instances of towers of all classes in the several districts of France of which the dates were tolerably well ascertained, but nothing that seemed to him to take the credit of them from the Normans. He thought the Norman towers generally gave a notion that they were intended to be finished with a spire of some sort, whether high or low. Mr. Parker's paper, if thoroughly gone into, would involve the whole question as to the priority and merits of English and French architecture, and other subjects of great interest, but it would be quite out of the question to enter upon them this evening. He most heartily concurred in the vote of thanks for Mr. Parker's interesting paper.

Professor Donaldson added that it was interesting to observe the manner in which the octagonal spire was introduced above the square tower, so as to produce an harmonious combination. This was a notable feature in many of the Norman churches of the period to which Mr. Parker's paper referred.

Mr. White would supplement the remarks upon these walls by stating that the Romans appeared to depend almost entirely upon the goodness of their mortar cement, and not upon the manner of their stonework; while Mediæval works depended so much more upon the construction of the stonework, and very often built with earth almost without lime in their rough walling.

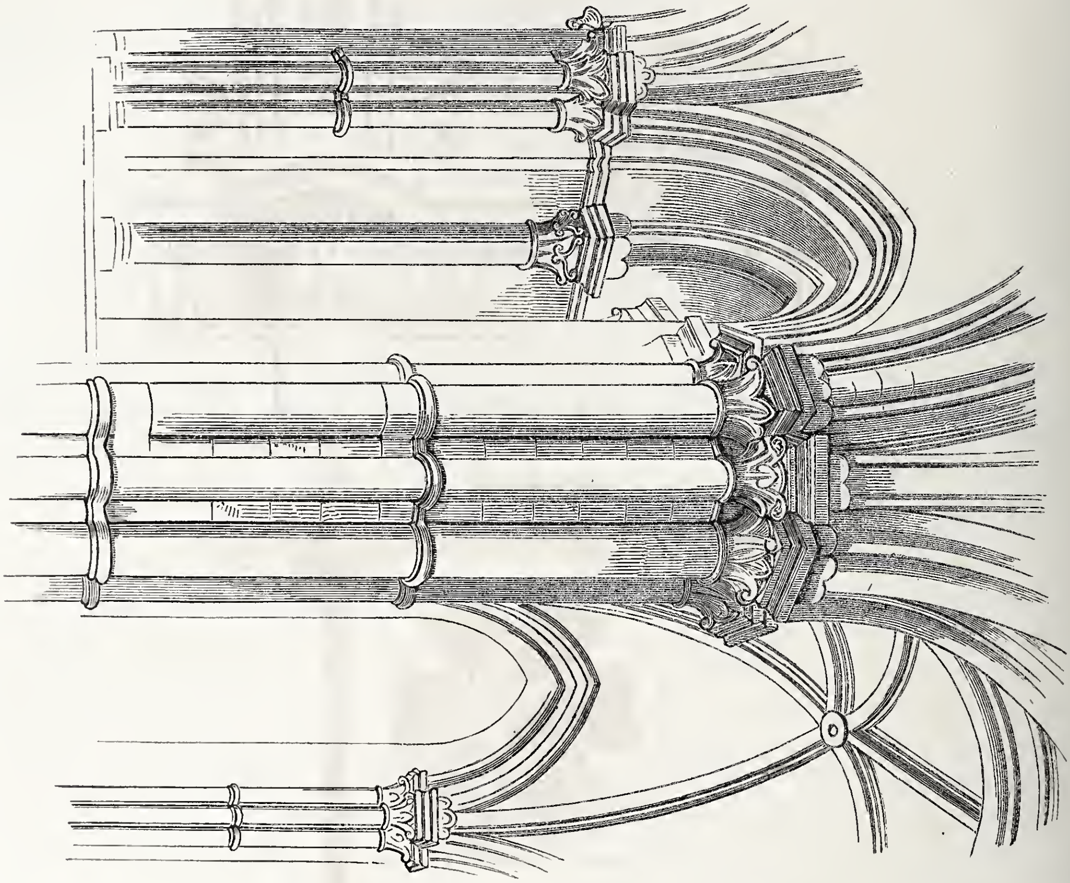
Mr. Hiscocks, Fellow, on the subject of outer and inner casings, warned young architects against falling into what he considered a great error of construction. He had found it so in practice. The outer casing of walls with such material as Kentish rag was a deception; and he could give instances where the walls to a certain extent were false, and when the building was carried up it was obliged to be put into a straight-waistcoat before the roof was covered in. That was owing to the principle of not bonding the outer casing with the inner portion of the wall, and which practically is not carried out. In the present utilitarian age architects generally tried to save as much material as they could, and the walls were seldom built very thick. There was no chance of buildings falling from the great thickness of the walls; but on the contrary, walls were rendered insecure by being compounded, or not built with materials that will bond readily. He considered one-third of the thickness or strength of the wall was taken away by the use of the outer casing, an entire brick wall being the strongest.

The PRESIDENT, Mr. A. J. B. BERESFORD-HOPE, considered that extremely interesting matter had been brought before the meeting both in the paper and in the discussion upon it, more particularly as to the priority of the Gothic of England and France, and the practical questions connected with the construction of walls. These questions had been legitimately raised in the paper, and had been legitimately debated by the speakers. He would not add a word to what had been said, but would now call upon the meeting to respond to the invitation that they should give their thanks to Mr. Parker for preparing the paper; to Mr. Hayward for reading it in so able a manner; and he would suggest that the vote should also be extended to M. Bouet for his very beautiful drawings in illustration of the paper.

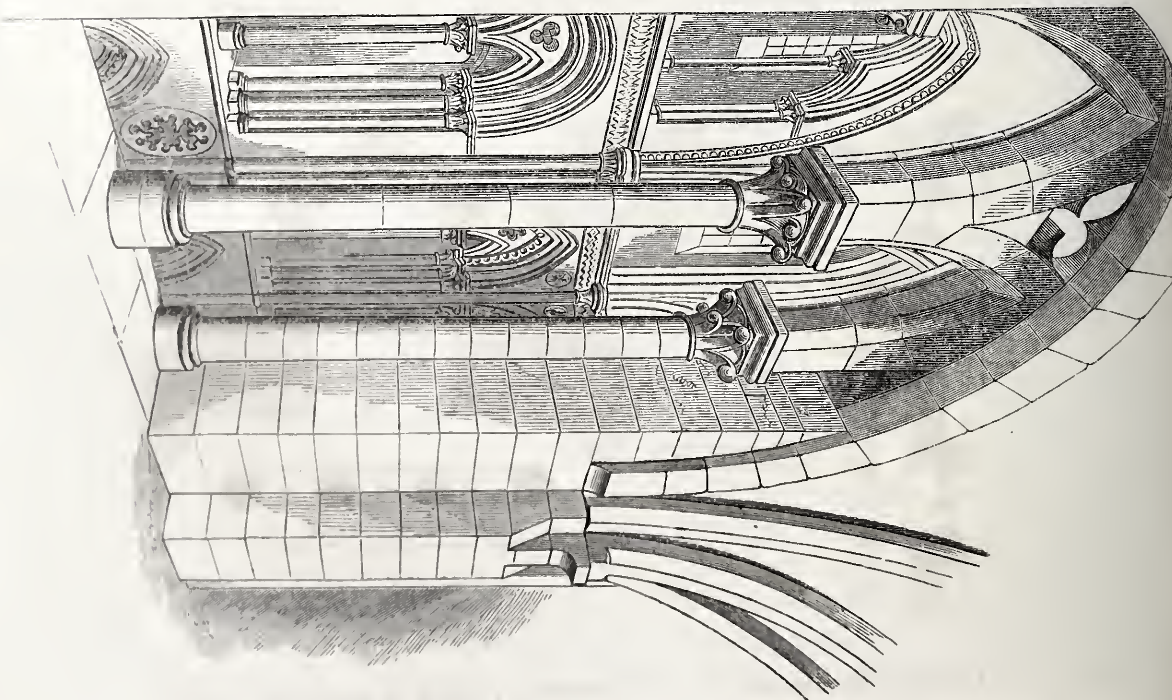
The resolution was unanimously adopted.

Mr. C. F. HAYWARD, Hon. Sec., acknowledged the compliment paid him for the discharge of only an ordinary duty of his office, and expressed a wish that he might be more frequently called upon to read papers by members resident in the country, who could not always make it convenient to attend the meetings of the Institute.

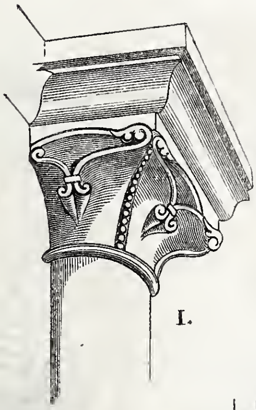
The meeting then adjourned.



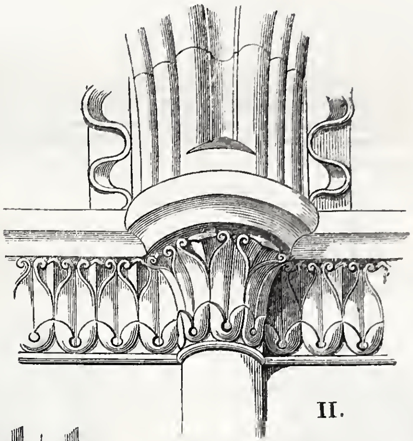
Apsidal Chapel.



Interior of Triforium Gallery in Choir.



I.



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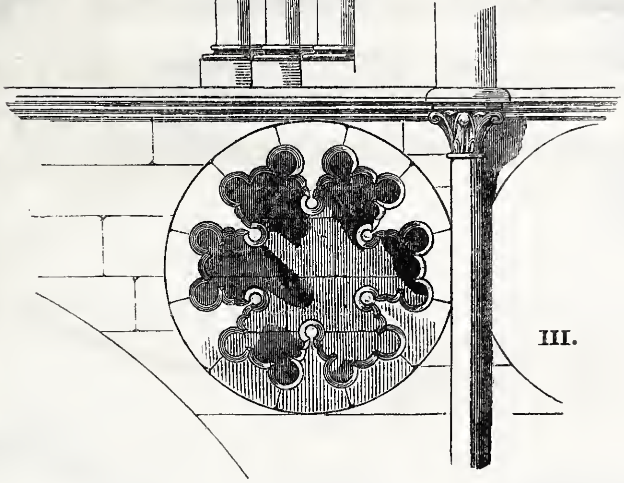
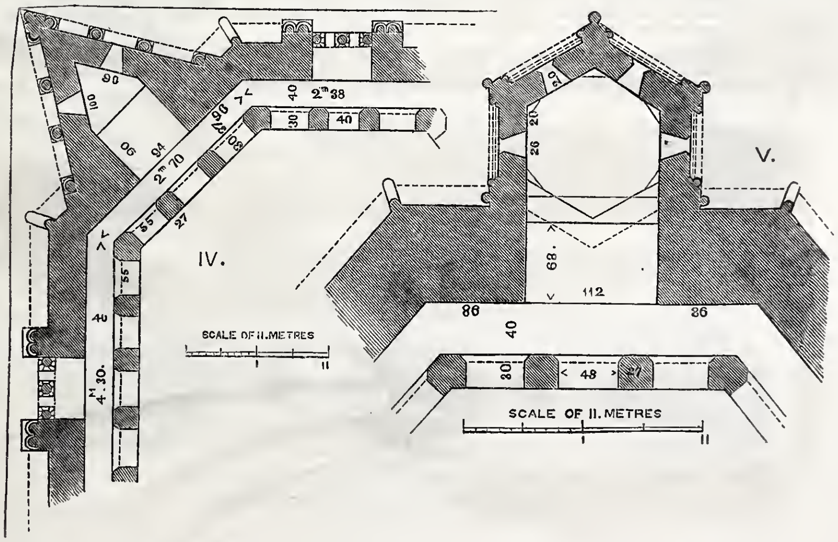
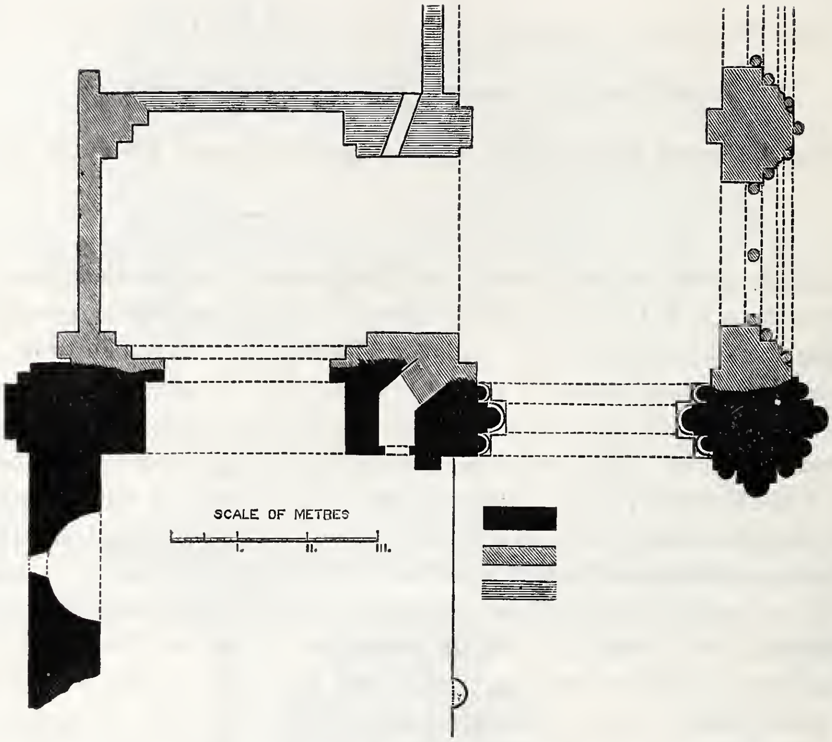


III.

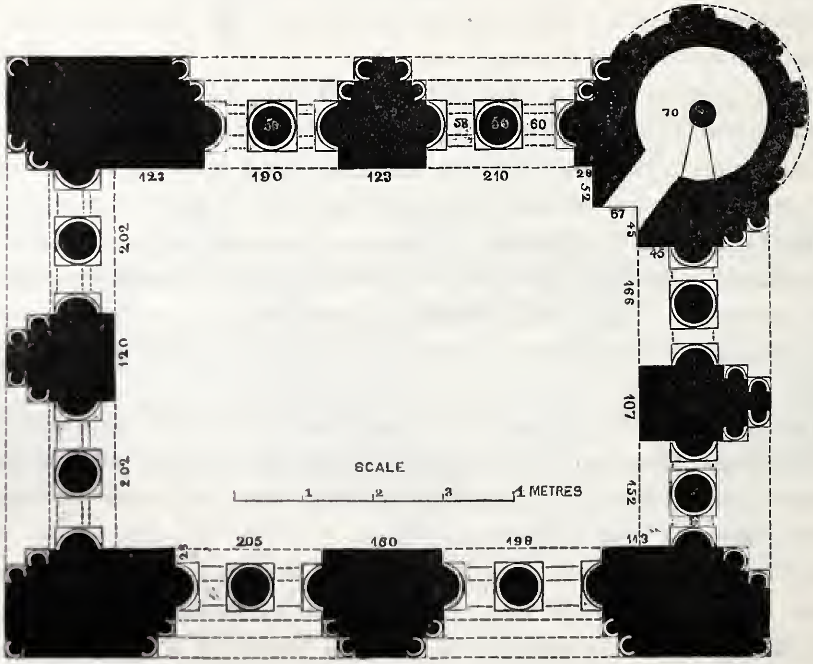
I. CAPITAL OF SHAFT IN ONE OF THE APSIDAL CHAPELS. II. VAULTING SHAFTS IN CHOIR.
III. 'ROSACES' IN CHOIR IN SPANDRILS BENEATH THE TRIFORIUM GALLERY.



IV. SOUTH-WEST TOWER. V. TURRET AT ANGLE OF NORTH-WEST TOWER.
PLAN OF THE GALLERY OF THE SPIRE.



Plan showing junction of the Gothic choir with Romanesque transepts.



Belfry stage, north-west tower.

ON THE WATER SUPPLY OF ANCIENT AND MODERN ROME.

By Rev. R. Burgess, B.D., Honorary Member.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, March 12th, 1866.

It was a paragraph in one of our daily journals which suggested to me the thought of writing a paper upon "The Water Supply of Ancient and Modern Rome." It was not, indeed, necessary that I should inflict the reading of such a paper upon an Ordinary Meeting of this Royal Institute, but I have been so often, in years gone by, indulged with a patient hearing, that I ventured to propose to add one more dissertation on Roman matters to the long list which, I see to my dismay, stands under the letter B in your newly printed catalogue. The paragraph mentioned,—a Prospectus which had been issued by the Anglo-Roman Water Company, with a capital of £200,000, in shares of £20, to suppply Rome with water from the springs at Arsoli,—the old Marcian aqueduct was to be cleansed and repaired, and that purest of all waters which ancient Rome enjoyed was to be brought to Rome for a high level service. Referring to the prospectus, all the advantages of the scheme were pointed out in a very able paper, not only the advantages which were to benefit the Roman people, but also those which would benefit the shareholders, my fear is that the only party that will not benefit is the Aqueduct itself, so far as it forms a grand feature in the picturesque beauty of the Campagna. It may, however, be hoped that if there be any attempt to imitate the elegant arcade of a Greenwich railway, or the light and airy construction of a Ludgate Hill viaduct, the *genus loci* which presides at the Arco Furbo will forbid the union between *Anglo* and *Romano.* But there is one observation in the Anglo-Romano Water Company's prospectus which disconcerts all my previous notions of thirty years as to the water supply of Rome. The prospectus says: "Rome, though ornamented with numerous fountains, is perhaps worse off for pure drinkable water than any other city of its size in Europe!" What can have made the difference in thirty years is to me a mystery, because at that time the universal opinion was that no city in Europe was so abundantly supplied with pure water as Rome. The only way I see of accounting for this remarkable scarcity is that there has been a gradual drying up of the springs and streams which used to flow so copiously into the numerous fountains since the French troops have encamped by the banks of the Tiber! The question, however, of how our Metropolis and other large cities are to be supplied with a sufficient quantity of pure water has become one of the most important of our age, and if we can learn anything in this branch of social economy from the ancient Romans, it may not be altogether a useless task to see the degree of perfection to which they brought this department of their social economy.

Until the year 431 of the city the people of Rome were content with the waters of the Tiber both for bathing and drinking. There were, however, some wells and fountains close at hand, and rivulets at no great distance, which were not contaminated at that early period with the "purgamenta urbis," which we translate "sewage;" but in the time of Trajan (say A.D. 102) nine copious streams of limpid water flowed into the city, running from great distances, and were conveyed in subterranean channels, or, wherever the level required it, over the tops of lofty arches. At a later period there were even more; but we take the time of Trajan because it was near the beginning of his reign that Sextus Julius Frontinus produced his work entitled 'De Aqueductibus Romæ Commentarius,' from which we derive almost all our information up to that period concerning the great works of Republican and Imperial

Rome. Of modern writers upon this subject none can compare with the learned and diligent Fabretti. His dissertations, 'De Aquis et Aqueductibus veteris Romæ,' published in 1788, were written mainly to show that the Aqua Felice, brought to Rome by Pope Sixtus V, was really the ancient stream called Aqua Alexandrina, and not as was supposed the Aqua Claudia. In order to pursue his enquiries and establish his point, a matter insignificant in itself, this great antiquary spent many years of his life in the Campagna, tracing every line of ruins and turning over every brick that might lead to the discovery of a *specus* or conduit, until he was enabled to grasp the whole subject of the ancient water supply of Rome, and describe the course of every stream from its source. Fabretti performed all his journeys on a mule, which became the companion of his daily life; and it is recorded of the mule that the creature of its own accord would always stop whenever it came to a heap of ruins or a few bricks amassed together. If any such treasure escaped the notice of the antiquary, while he might be dozing at noonday as he went along (*quandoque bonus dormitat Homerus*), the mule made the discovery, and so entitled himself to take rank among all the antiquaries who refused to admit Fabretti's theory. Alberto Cassio is another modern writer who has traced the water courses, and given much accurate information on the several aqueducts.

The native rivulets of Rome were: 1. The Almo. Its course, from its head to the Tiber, did not exceed five miles; hence the apt description of Ovid, "cursu brevissimus Almo." It fell into the Tiber near S. Paul's fuori le Mure, but if used at all for domestic purposes it could only have been available for the villas, or the Vicus Alexandri on the Via Ostiensis, 3 miles from Rome. 2. The Aqua Mercurii, near the Porta Appia, which took its rise at the roots of the Cœlian and Aventine hills. 3. The Pool of Juturna at the foot of the Palatine. 4. In the Forum was the fountain of the Lupercal. 5. The warm springs, Lautulæ, at the foot of the Capitol; and lastly, the fountain of Picus and Faunus, rising from a grotto under the Aventine hill. All these streamlets and fountains put together, however, soon became inadequate to the wants of Republican Rome, and long before the Carthaginian war it was necessary to devise means for a fresh supply of water. It may be some consolation to our great companies, who cannot always *see their way* clearly to water-works and railroads, that the first aqueduct and the first great road ever constructed were done by a blind man, Appius Claudius, called Cœcus, 321 years before the Christian era. He conducted a stream of water to Rome, and constructed the Via Appia. The Aqua Appia had its source in the territory of Lucullus, at about 700 yards ("passus") to the left of the Via Prenestina, between the seventh and eighth milestones, and after effecting a distance of 11 miles 190 yards, it ended at the Salt Magazines on the Tiber, near the Porta Tregimina, and distributed its supplies under the Clivus Publicii about the Aventine hill. There were junctions in those days as well as in our own. The Aqua Appia 300 years later was reinforced by Augustus with an additional stream, brought from near the sixth milestone on the road to Preneste, and when it reached the gardens of Torquatus the stream was called Gemellæ, which in our railway nomenclature we should call the "horticultural junction." I believe there are no traces of this subterranean channel at present. Piranesi, however, thought he discovered some conduits that might have belonged to it just under the Aventine hill. The Aqua Appia, although now no longer existing, is deserving of a place in the history of the water supply of old Rome.

Thirty-nine years after the Aqua Appia (that is, in the 481st year of Rome,) the Anio Vetus was conducted to the city by Manlius Curius Dentatus and Lucius Papirius Cursor, Censors. The cost of this work was defrayed out of the spoils of the war that had been waged with Pyrrhus, king of Epirus. Manlius, having died a few days before this great work was finished, left his colleague to enjoy all the honour and glory of the undertaking. The Anio Vetus began above Tivoli, at a distance of 20 miles from Rome, and before it reached the city it had run, by a winding course through the Campagna, 43 miles; of this 42 miles 779 paces were subterraneous, and only 221 paces of it appeared above ground. All that remains of this ancient "ductus" is a piece of the "specus" just visible among the foundations of the walls of the city, near the present Porta Maggiore. It would almost require the eye of Fabretti's mule to detect it; but if any one, being at Rome, is curious on the matter, let him, going out of the gate, seek a few yards on the left, not above but below, and he will discover a worn piece of black stone at his feet, trying to hide itself under the brick walls which Stilicho patched up in the days of the Emperor Honorius. The word "specus" must frequently occur, now that we are beginning to pass from the invisible to that which is more visible and substantial. I need hardly say that the "specus" is the channel through which the water runs, and although the original meaning of the word is a den or hollow under the earth, it came to mean the subterranean cavity through which the water ran, and it is in this sense a "Vitruvian term." The "specus" was not always of the same dimensions. In the Claudian aqueduct it was 4 feet 3 inches wide, 6 feet high, and the flanks were 3 feet thick. This thickness was composed of three distinct strata, which, according to Vitruvius, ought always to be where water had to run through, or stand upon the flat roofs of houses. The first of these strata was a thick coating composed of pounded coarse materials, *cocciopesto*, as the Italians call it; the Vitruvian name for which was *opus signinum.* The second coating was called *opus spicatum*, and consisted of small bricks like wedges, laid transversely, and resembling the object from which the name is derived, *spica*, an ear of corn. The third or upper coating was coarse mosaic for the terraces of houses, but a kind of mastic, called *opus mixtum*, for water courses. This preparation was so complete, that no water if running through the "specus" for a thousand years could ever affect it; on the contrary, so far as the waters that ran to Rome were concerned there was a fourth coating from the calcareous deposit, which now after some 1800 years may be seen on the interior sides of the now dry channels, and the remains of reservoirs into which they poured their streams. During the sudden snow storm which came upon us a few weeks ago, when I saw some of my ceilings begin to change colour, I longed for three things, after the manner of the ancients, to keep me dry, viz., the *opus signinum*, the *opus spicatum*, and the *opus mixtum;* and I am glad of this opportunity of recommending all young architects to underdraw the roofs of all houses they build with the Vitruvian composition. Now, dry as this subject is, it was needful I should show you how to keep out humidity, and if you want to see how effective the Roman method of securing dryness was, you go the next time you are at Rome and examine the Cente Camarelle of the Villa of Hadrian, near Tivoli, and you will see that although a perpetual moisture soaks into the hill against which these chambers are placed, every inch is at this day as dry as when they were first built in the reign of Hadrian. Having now, I trust, got a comfortable idea of a "specus," let me return to the "Waters."

The two waters in their subterranean courses already described seem to have served their purpose for more than 125 years, but at the end of that period the channels were found to be damaged, and private individuals had begun to filch away the supply before it reached the city. The remedying of this evil fell to the lot of the Prætor Quintius Martius Rex. Besides regulating the old subterranean channels, he made the grand aqueduct which for ever after was called the Marcian; this is the water with which the Anglo-Roman Company propose to refresh modern Rome. The Aqua Marcia had its springs at the distance of thirty-six miles from the city: at the thirty-third milestone on the Via Valeria there is a diverticulum, or cross road, on the right as the traveller goes from Rome, and three miles on that road, which is the Via Sublacense, are those springs. They are about a mile from Arsoli, and behind the Church of S. Maria; after appearing above ground they very soon lose themselves in the foss of Riofreddo; from thence the Aqua Marcia assumes its name and begins its course from the Mount S. Elias. Pliny thus speaks of the Aqua Marcia: "Clarissima aquarum omnium in toto orbe frigŏris salubritatisque palma præconio Urbis Martiæ est inter reliqua Deûm munera Urbi tributa." This great gift of the gods to Rome is now conceded to six Directors, with power to add to their number, and no doubt there are two advantages which no one can deny, the springs are never failing (connected as perhaps they are with the Fucine Lake), and the water is the purest that Old Rome ever drank. The whole length of the course of the Aqua Marcia was 60 miles 710 passus, of which 6 miles 463 passus were carried over arches, as it approached the city. They are the remains of those lofty arches which produce such a striking effect in the Campagna; they may be followed for two miles without interruption on the road from Rome to Albano, beginning beyond the "Tavolato" at about four miles from the Lateran; they are built of peperine stone. The "specus," is in many places still perfect, though no longer used. Over the same arches two other waters were conveyed, the Tepula and the Julia, the third being the highest; the "specus" of the Tepula is still discernible in several places. This water was introduced by the censors Cn. Servilius Cæpio and L. Cassius Longinus, in the year of Rome 627, that is twenty-one years after the Aqua Marcia. It took its rise in the Lucullan territory, or as it is sometimes called the Tusculan. To arrive at its source it was necessary to go ten miles on the Via Latina, and then turn off to the right for two miles; it was called Tepula because of its being rather warm at its source, Quasi "tepida:" we shall see its channel aloft at the Porta Maggiore. The Aqua Julia, carried over the Marcian aqueduct also, was the topmost, but except at the place where the channel begins to emerge from the ground there are scarcely any remains of this "specus." The Aqua Julia was a spring discovered by Agrippa when he was Œdile (U.C. 719), about two miles above the source of the Tepula; he called it Julia in honour of Augustus. The length of its course was fifteen miles 427 passus, of which seven miles were carried over the Marcian arches. The Aqua Crabra had originally flowed into the Julia, but it was turned off by Agrippa as not sufficiently pure, and he gave it to the inhabitants of the Tusculan territory.

The five waters whose courses have now been sketched, all entered Rome on the south-east side, but in coming to the sixth and seventh, in chronological order, we must look towards north-east. After Agrippa had conveyed the Aqua Julia over the Marcian Arches, he brought another stream of the purest water to the city which has proved to be a durable monument to his memory, for it is the same which at this day feeds the Fountain of Trevi. The source of this water is near the Torre Salone, about eight miles along the ancient Via Collatina, and near the River Anio; it is all subterraneous, except 7400 passus, and it had effected a course of nearly thirteen miles before it reached the city; it was carried over a ductus which began at the gardens of Lucilius and ended in the Campus Martius, and from thence supplied the baths of Agrippa. It enters Rome by the Muro Torto, near the Flaminian Gate, and runs under the garden belonging to the church and convent of the Trinità dei Monti, at a great depth. In the Via della Stamperia, vestiges of the ancient aqueduct may be traced behind the houses, and in the Via del Nazareno, by descending into a washing house, where the Stiratrici at work are particularly obliging, the original arches may be seen; but still more perfect, in the courtyard of the Bufalo Palace, a large and legible inscription, written on Tavertine stone, leaves no doubt of the antiquity and identity of this aqueduct, that "Claudius Cæsar made and restored those arches, that had been disordered from their foundations;" from the vestiges of some mouldings and ornaments on these arches it may be inferred that in this place was one of the "Salientes," or fountains, of which Agrippa made so many in the city. As this work was begun only twenty years after the death of Cicero, it may almost be classed among the few existing monuments of the Republic. From the Palazzo Bufalo, and washerwomen's lavatory, it is but a short distance to the beautiful Fountain of Trevi, where the waters sport and play among tritons, nereids, and other sea nymphs, superintended by Neptune in a dignified attitude. Agrippa at first gave the name of Augusta to this water, but later the traditional story related by Frontinus prevailed over the imperial title. When some of Agrippa's soldiers were wandering in the territory of Lucullus, and became greatly distressed for want of water, a young damsel led them the way to this delicious spring. A small little temple, Ædicola, was built over against the source, and a painting upon the wall represented the young virgin in the act of conducting the thirsty soldiers to the place. The stream to which Rome has been indebted now for nearly 1900 years was called the Aqua Virginis; it is one of the three ancient waters which now supply Rome, and it furnishes the inhabitants of the Campus Martius, and the quarter of Rome where foreigners prefer to sojourn, with 66,000 cubical metres of the purest water every twenty-four hours. This aqueduct has received particular attention from the popes, from Nicholas V. to Benedict XIV. In the place where it issued from the channel, Nicholas V. made a fountain with three mouths in the places where three ways met, called a Trivium, hence Trevi, as the Rioni or ward is now called. Benedict XIV. made the famous fountain as it exists at this day. The next, which is the seventh aqueduct in order, was the work of the Emperor Augustus. He first conveyed a stream from the Lacus Alsietinus, situated six miles and a half to the right of the Via Claudia, at fourteen miles from Rome; its course effected 22 miles 172 paces, all subterranean except 358 paces. This was the water-course afterwards adjusted by Trajan, who introduced a new stream from the Lake Sabatinus, now the Lago Bracciano; this is the water now called the Aqua Paolo, and it supplies the fountains of St. Peter's, the Vatican, and the whole of the Borgo. Rome is indebted for this great supply to Pope Paul V. (Borghese). Fontana was the architect of the splendid fountain which receives and gives out every twenty-four hours a mass of 94,000 cubic metres of water. As late as 1828 Leo. XII. found it necessary, on account of a great drought that summer, to reinforce the Pauline Fountain with a new supply of water from the ancient Lacus Alsietinus. But this was not the only waterwork which Augustus gave to the city: he put an additional streamlet into the Aqua Marcia, and he took a branch from the Anio Vetus which he called the "Specus Octavianus." It also appears from the inscription to which I shall now allude, that he repaired the channels of all the waters, that it to say, of the seven which have now been enumerated.

It was Caius Cæsar Caligula who discovered that the seven streams which already supplied the city were insufficient for the increase of luxury and population, and he began to make two new aqueducts. He did not proceed far, but his successor, Claudius, continued and splendidly finished the work in the fifty-first year of the Christian era. From two springs called Cœruleus and Curtius, the Aqua Claudia was supplied; their sources were at a distance of thirty-eight miles from the city, on the Via Sublacensis. The whole length of this wonderful aqueduct was 46 miles 406 paces, of which 36 miles 210 paces were subterraneous; the remaining 10 miles 176 paces were carried over arches, of which a length of 6 miles 491 paces are seen as they approach the city. It was into this aqueduct that Pope Sixtus V. conveyed his Aqua Felice, which begins near the Osteria dei Pantani, at about fourteen miles on the road to Prœneste. But it was not the Aqua Claudia which was so brought to Rome, Fabretti's treatise was written to show that the Aqua Felice is the ancient Aqua Alexandrina, yet to be mentioned. The last of the nine waters described by Frontinus was the Anio Novus, brought also by Claudius; it took its rise on the Via Sublacensi, at the forty-second milestone, it was indeed a portion of the River Anio, as its name implies, and called Novus to distinguish it from the old Anio conveyed to Rome 312 years earlier—it was the new river. We have one which, as you know, flows through the green pastures of Middlesex. The Anio Novus, before it began to flow in its "specus," was purified by means of a "Piscina limaria;" it effected the incredible distance of sixty-two miles, forty-eight of which were subterraneous. The arches above ground rose sometimes to the height of 109 feet. The remains of these, viewed with the Marcian arches, stretching over the "marble wilderness," form the most picturesque and striking object in the Campagna.

At the Porta Maggiore was the concourse of waters; the Anio Novus was the highest stream of all the nine now enumerated; the "specus" may still be seen above the large inscription of the entablature, next below it the Claudia; the Julia was the third in order of elevation, the Tepula the fourth, the Marcia the fifth: next in descending the Anio Vetus, the Virginis, the Appia, and the Alsietina, the lowest. We have now no longer Julius Frontinus for our guide, but we have Fabretti and Alberto Cassio for our commentators. Frontinus does, however, mention those arches of splendid brickwork which cross the Cœlian Hill, and conveyed the supply of water to Nero's "Golden House" and gardens, and later, for the use of the Colosseum. They are the Arcus Neroniani, and are still a conspicuous object to be seen near the Lateran. I will not trouble you with the short branches made by succeeding emperors for local convenience, but only add a notice of the Alexandrian Aqueduct, constructed by Alexander Severus, A.D. 212; some of the remains of this last great watercourse may still be seen on the Via Labicana, at no great distance from the Torre Delle tre Treste; its length was twenty-two miles, and its arches in some places were seventy Roman palms high. It was the stream which run through this aqueduct that Fabretti insisted was the water which Pope Sixtus V. conducted, with the skill of Domenico Fontano, to Rome, in 1586, making use of the Claudian Aqueduct for that purpose. He gave it the name of *Felice*, from the first of his own names, *Felice Peretti.* With the energy with which that pope, called sometimes the Augustus of Modern Rome, performed all his great undertakings, he employed upon the construction of this work never less than 1000 labourers at a time, and sometimes as many as 4000 or 5000. It entered Rome near the Amphitheatrum Castrense, and followed its course along the walls to the Porta Maggiore, and is now to be seen passing over a *ductus* of three arches, erected by the same Pope, at an elevation of 48 metres above the level of the Tiber; it supplies the more elevated parts of Rome, feeding first the fountain of S. Maria Maggiore; it runs towards the Viminale and Quirinale hills, supplying the great fountain at the Piazza dei Termini, and those in the Piazza Barberini, and at the Quirinale Palace; then it pours its waters into the fountain on the Campidoglio, and proceeds towards the Aventine, serving the south side of the Forum, and at the Bocca della Verita, and also the Quarters of the Jews. It furnishes 20,537 cubic metres every twenty-four hours, but it is not equal in quality to the others. The three waters, then, which now supply Rome were anciently the *Aqua Virginis*, now Trevi; the *Aqua Alsietina*, now the Aqua Paolo; and the *Aqua Alexandrina*, now the Aqua Felice; and these three streams pour into the city of Rome every twenty-four hours, according to Melchiorri, 180,537 cubic metres of pure water. This is about a cubic metre per diem for every single inhabitant (a cubic metre is more than our cubic yard); if this be so, I do not see my way to take any shares in the proposed new water supply, for it appears to me that already that supply is not like the New Water Company—"limited."

The three waters Marcia, Julia, Tepula, were conveyed in their several channels over one aqueduct, the Marcian; and at the Gate of S. Lorenzo, anciently the P. Tiburtina, which is now nearly on its original level, the aqueduct is seen, but interred up to the spring of the arch, and yet exhibiting the three "specus" distinctly. The entablature which is rent in many places still exhibits the inscription of Augustus, Titus, and Caracalla; but the great concourse of the principal channels was at the ancient Porta Prœnestina, now the Porta Maggiore, where seven waters without mingling flowed towards this gate. I need not enumerate them again, and it was no doubt on account of this concurrence of aqueducts that the magnificent frontispiece which is so familiar to us in the drawings of Piranesi and others was erected here, and the inscriptions which are read on the lofty entablature made to record the acts of imperial magnificence (see the drawing or sketch). But I must hasten on, though leaving much behind, and ask your indulgence for a few minutes more to see if we have anything to learn from the mode in which those waters, when brought to the city, were managed. The several waters were first poured into a reservoir for purging them, called "a piscina Limaria." The waters were allowed to settle for a time in a Piscina until the calcareous matter held in solution was deposited, and then the water was let out to pursue its course; after running some distance, the water fell into a "Castellum aquæ," (a Château d'Eau.) This castellum aquæ received the supplies of several aqueducts, and discharged a portion of the water into a large basin very much resembling the present Fontana Paola on the Mount Janiculum. There is now existing a mass of ruins not far from the Church of St. Eusebius, on the Esquiline hill, where anciently the two roads Prœnestina and Labicana met: these ruins are commonly called the Trophies of Marius. Tradition has sanctioned the name arising from two sculptured marbles which were found, and which now stand on the balustrade of the Campidoglio, one of them has a cuirass with its ornament and shield, with a young barbarian bound as a captive; on the other various instruments of war are sculptured. This ruin was generally believed to have been a *Castellum Aquæ;* it received, perhaps, two of the streams at least that arrived at the Porta Maggiore. It was a convenient situation for a supply of water, whether it be called a Castellum or an Emissarium. It is clear from excavations that have been made that there were water conduits conveying the supplies to different parts of the city. The plan which I here present of this great fountain is not imaginary; the elevation is in a great measure authorized by a drawing made in the middle of the sixteenth century, when the ruin was more perfect, and is found in the work of Benardo Camucci. At that time the trophies stood in their recesses, and some of the architectural ornaments were remaining. [By reference to the plan, it will be seen that the water being first divided by the round projecting buttresses, were distributed into five channels, and then through as many issues poured itself into a vast reservoir as represented in figure 2.] It must have been one of the greatest ornaments of the city, and appears to have been richly ornamented. Some of the most celebrated statues of antiquity have been found near it, and may have belonged to its embellishments, viz., the Adonis or Meleager of the Vatican, the Discobülus, the Seneca of the Villa Borghese, and others mentioned in the Memorials of Flaminius Vacca; so that before the waters were sent forth through the conduits for the use of the inhabitants, they were made use of for the ornament of the city, and as they went along they were laid under contribution for lesser fountains called "Salientes," the whole was regulated by officers appointed for the purpose. The person that had the oversight of the "Castellum Aquæ" was called a *Castellarius;* it was his business to look to the proper quantity of water which the aqueducts under his charge had to supply. Fabretti found two inscriptions which throw light upon the economy of water; the one is a Castellarius of the Aqua Claudia, the other of the Aqua Marcia. He allowed the water to run for a certain number of hours for the public supply, and then kept his reserve in the proper castellum or piscina. A certain Aufidianus had charge of two waters, and, as the inscription has it, they were to run "ab horâ secundâ ad horam sextam" four hours, and all the inhabitants knew when Aufidianus let out his streams. The Castellarius was a superior officer, and not a common turncock; this term would rather suit the more menial office of *Aquarius,* as may be inferred from Juvenal: veniet conductus Aquarius. These aquarii or turncocks had to be careful in measuring out the water in proper quantities, whether for public or private uses, so many *quinarie* were to be accounted for, and Frontinus has furnished us with six tables showing how the water was dispensed. From the Marcian channel were dispensed 269 quenarie outside of Rome in the name of Cæsar, that is, it was an imperial grant, and 568 for private individuals, and the 1098 remaining were distributed over ten regiones or wards in fifty-one Castelli, and so of the rest, showing how carefully this department of social economy was managed; and yet the waters were made to subserve the ornament of the city before given for the use of its inhabitants. From the castella the water was distributed to public and private uses, under the care of the aquarii, but the details of this operation, as given by Frontinus, are not very clear. The water seems to have been measured or estimated—first, according to the size of the pipe; and, secondly, by the time allowed for the running. But these pipes did not convey the water into the houses as we have it, but it was poured into small reservoirs called "lacus," of which there were a great number in each of the fourteen regions. In the Cœlimontan region alone there were sixty-five; the Baliniæ also were very numerous, many of them private, but some public and extensive, the next after the Thermæ.

Frontinus when he entered on his office of Præfectus Aquarum, found there was much waste and fraudulent abstraction, householders sometimes slyly tapped the pipes, and bribed the aquarius to deliver a larger quantity than was due into a private pipe, or by opening new supplies, without closing the others in proper time. The Præfectus Aquarium tells us it required his ceaseless vigilance to prevent these honest men from selling water on their own account. There are many very curious circumstances connected with the water works of old Rome, which it would take too much time to enumerate. We have already found some things worthy of our imitation. Instead of constructing an immense open reservoir for dead and decaying animal and vegetable matter to find its way and decompose, the Romans had all the *specus* and *limaria* covered. Vitruvius lays it down as a rule, *eæque structuræ confornicentur ut minime sol aquam tangat,* let them be arched over, so that the sun may on no account touch the water. Again, instead of letting the water pass at once into the cisterns or reservoirs, why not let us have fountains or cascades in the city? See how beautifully the streams would fall from the high level of the New River, down to the City, and through Regent's Park to Piccadilly, giving out clear springs by the way. We should have a Frontinus, or Prefect of the Waters, and include him in the New Reform Bill to-night, with a seat in the House to answer all questions about the supply of the metropolis. Why should we not have a Castellarius or inspector of fountains, to whom all complaints of turncocks or aquarii, leaving your house for half a day without your quinarie of water. If, as we are told, there is some scheme for *introducing* a system of water into our metropolis from purer sources at a great distance from the City, let there be some attention paid to the ornamental power of water, for the quantity will be no less for use if it passes through fountains and waterfalls before it reaches its destination. There is yet a great work to be done in this most important department of our social science. We have made some progress in getting light into our dwellings, and some of our industrious citizens are beginning to admit air into their bed rooms. The third element of good water, when added to air and light, is capable of creating a more cheerful existence.

The CHAIRMAN, Mr. T. HAYTER LEWIS, V.P., said there could be no question that the thanks of the meeting were eminently due to Mr. Burgess for his very able and interesting paper, and he, hoped that some gentleman would introduce that motion by some observations bearing on the subject.

Mr. G. R. BURNELL, Fellow, said he had brought with him a copy of an article, published by M. Rosat de Mandrey in the 'Annales des Ponts et Chaussees' for September and October, 1858, "On the Ancient Aqueducts of Rome, described by Frontinus," and which also gave a description of the supply of water to modern Rome. He was much struck with Mr. Burgess's account of the Anglo-Romano Water Works Company, which certainly appeared to him a most extraordinary statement. The supply of water to old Rome appeared to have been 332,310,000 gallons per day, while the supply to modern Rome was 196,240,000 gallons per day. The population of ancient Rome was at the outside about 1,000,000, while that of modern Rome did not exceed about 200,000. Really the operations of the Water Works Company in that case seemed to be most preposterous; inasmuch as the proportion of water now delivered in Rome was very largely in excess of the quantity delivered in London at the present time; for the London Water Works Companies were only entitled to draw about 100,000,000 of gallons per day from the River Thames, and that would be about half the present daily supply to London. The population of London, which was 3,100,000, therefore could not command a greater supply than the population of Rome did at present. In the book to which he had referred, a great deal of interesting information would be found on this subject.

Mr. Grant, Visitor, thought the population of ancient Rome had been under-estimated, as it had been stated by various authorities at 3,000,000, 4,000,000, and 5,000,000.

The Chairman remarked that the question of the population of ancient Rome was a very disputed one.

Mr. G. R. Burnell, Fellow, might be allowed to demur a little to the suggestion of the author of the paper with reference to the office of *præfectus aquarum;* for he did not think in the present day that any ornamental organisation of fountains could be tolerated in London. He meant he did not think we were a people who could essentially call for the organisation of public fountains in our streets, and for this reason, that public fountains must always diminish the head of water. What they wanted in London was some system which would maintain the head of water to the point of delivery, which of course could not be obtained if they disposed of the head in the fountains which would deliver the water at the level of the lowest parts of the streets. He did not think an organisation of fountains could be carried out in the metropolis consistently with the wants of the population in respect of the water supply.

The Chairman remarked that those acquainted with the fountains of Rome must be struck with the observation of the late Sir Robert Peel, in reference to Rome—that he was fond of fountains, but did not like squirts. Looking at the body of water that was poured through the fountain described, (of which the drawing was exhibited), and many others in Rome, compared with that which was thrown up through even the best fountains in London, the observation came home to them. He should be glad to know whether there was any gentleman present who had been in America, and could give the meeting a description of the greatest aqueduct of modern times there—the Croton at New York.

Mr. W. A. Boulnois, Fellow, said he believed the object contemplated by the Anglo-Roman Water Works Company was the supply of the city of Rome with water on a system convenient for the purposes of domestic life, so that people could use their own taps and obtain something of the abundance of water which existed within and around Rome, without the trouble of seeking it down at the level of the fountains, which was the case at the present time. No doubt the amount of water which ran to waste at Rome was quite sufficient to supply even London itself; but it ran so entirely to waste, and was so unavailable for practical purposes, that it seemed to be considered worth the while of an English Company to provide means for taking some portion of that water, and storing it at a level sufficient to give a head for supply at the points required; and he hoped they would succeed in showing that the utilitarian purposes sought to be effected in that undertaking would be even superior to the ornamental ones which had been suggested. The great feature of the thing he believed would be that the Romans (who were known to be a very dirty people in themselves, and who gave for the most part a very inefficient supply of water to their visitors,) should be able to furnish something like an adequate supply for the performance of the matinal toilets to their visitors without grudging it. By the present system they had to let down a pail along a rod which led to the fountain in the court below, and when filled the servants pulled it up by a cord passing over a small pulley to the level of the floor where it was required, whether second, third, or fourth floor. There it was emptied into a receptacle provided expressly, or perhaps used for the culinary purposes of the house. That was a process so primitive that one would be glad to see a change of the system. Therefore, while agreeing with what had been said as to the desirability of employing the waters of Rome as far as possible for ornamental purposes, he at the same time hoped cold water would not be thrown upon the company which contemplated the utilisation of a large portion of the present supply of that city, which now ran to waste.

The Rev. R. Burgess, B.D., Hon. Member, had no wish to throw cold water upon the Anglo-Roman Company. They were about to convey a stream of the purest and coldest drinkable water that old Rome ever had, and the springs near Arsoli were never failing. With regard to the quantity of water now supplied to Rome, he had stated upon the authority of the Marchese Melchiorri that 180,500 cubic metres of water were poured into the city every twenty-four hours. Taking, therefore, the population at 180,000,—for when the French army left there would not be more,—that was one cubic metre daily for each person. Imagine a tub more than a yard square as the water supply to every individual in London! That would be equal to 222 gallons per day each person. Therefore, as to quantity the operations of this Company did not seem to be called for; but it was in the matter of quality of water that it might rather look for commercial success. He had no wish to speak of the Company in disparaging terms. First of all it was to be a high service; it was to bring the water through one of the loftiest aqueducts; it would serve all the upper parts of the city, where at present there was a deficiency. In the next place the water they were to supply was of the best and purest quality; therefore he conceived persons would have recourse to that water for drinking purposes, and probably the Company might pay a fair dividend to the shareholders. The only thing he hoped was, that they would not destroy the picturesque beauty of the existing aqueducts, which at present formed so charming a feature in the landscape in the Campagna. With regard to the population of old Rome, the Chairman had rightly said opinions were very various. He had his opinion on that subject, which he had taken some pains and trouble to arrive at. He had endeavoured to make an estimate of the real population of Rome at the time of the Emperors Valentinian and Valens, A.D. 364. There were two documents of the above date, one by Publius Victor, and the other by Sextus Rufus, which consisted of a catalogue, prepared by those two Consular men, of the number of public buildings and habitations in Rome. At that time the dwellings were of two descriptions, the one called *insulæ*, or blocks of houses, but "isolated" from one another by an alley running round them; the other was the *domus*, or house of the great men, which contained the family, including the freedmen and slaves and other dependents. Taking a fair estimate for the *insulæ* and the *domus*, his calculation was—for which he had the authority of the Abbé Brottier—that Rome at that time contained a population of 1,104,000 inhabitants; but as to the large number of four or five millions he was convinced that was a grand mistake. Tacitus mentioned the number of Roman citizens as being 4,000,000, but that was the number of those who possessed the rights of citizenship in the whole empire; and this had been erroneously taken for the population of Rome. His own belief was that Rome never contained more than 1,200,000 souls; and making the calculation of water supply upon the basis of that population, they would see how abundant that supply was. All the aqueducts at one time would furnish old Rome daily with about 1,444,000 metres, more than a metre for each person. He believed the inhabitants of the modern city were now as well supplied with water as old Rome was. It must not be supposed that the aqueducts he had noticed, and which were mentioned by Frontinus, were all that existed in Rome; for Procopius speaks of fourteen as existing in his time, and others tell of twenty-four channels or aqueducts. He had forborne to allude to them; but if at a future time they were desirous of having more on the subject, he might be induced to give them the history of the later aqueducts, and show that their failure was a principal cause of the decline of the city.

Mr. Thomas Morris, Associate, remarked that so far as they might take ancient Rome as an example for imitation in modern London there seemed to have been one good principle adopted,—that was, to collect all the water for the use of the city that they could bring to it. But the Romans were not over scrupulous as to quality. Members saw, in the diagram on the wall, the three aqueducts at different levels in the same construction, and not only were they at different levels, but each carried a different quality of water. Though it might be a laborious work to bring pure water to London in greater quantity than at present, it would not be so difficult, and would be attended with advantage to the population, if extra water of any quality almost were brought here to be used for inferior purposes. When they measured in round numbers the water supply to the city, and divided it by the number of inhabitants, it would perhaps be regarded as a large quantity. If it were appropriated to drinking and other personal uses exclusively, it would be one thing; but if they distributed that quantity for the general uses of the population it was a very different matter. He thought, therefore, that if the quantity could be enlarged for manufactures, watering roads, extinguishing fires, and other purposes, there would be economy in the case of London in leaving the pure supply entirely for personal uses. He wished just to ask Mr. Burgess whether, in his opinion (he, Mr. Morris, did not suspect the ancient Romans of using pumps) they were ever known in the ancient Capitol to have a jet of water thrown freely up? He could quite understand that they had an abundant overflow from the basins of the fountains, and that water ran from them in great profusion; but what he wanted to learn was, whether they had any upright jets of water, say, something in the manner of those at Trafalgar Square?

The **Rev. R Burgess** said, Pliny asserts that the Romans knew that water in a close pipe would rise to the level of its source, *subit altitudinem exortus sui;* and there was an instance in Rome which was some proof that they were acquainted with the springing-up fountain. Near to the Colosseum there was a conical mass of ruins, which was originally the fountain called the Meta Sudans. Meta was the stone boundary at each end of the Spina in the Circus, round which the chariots ran, and the fountain was shaped like the Meta; the spray fell down the sides, which gave the idea of a perspiration. Whether the foam, Sudans, was produced by pouring out at the top or with a jet nobody could tell; it was a doubtful question; but the general opinion was that the Meta Sudans was a kind of Trafalgar Square fountain.

Mr. **Burnell** called attention to the fact of the existence of a very large syphon at Lyons, which descended, he believed, about 200 feet in vertical descent, then passed off on the down side nearly at the level that it started with, which proved that the ancient Romans knew as much about the principles of hydraulics as we do.

The **Chairman** remarked that there was a passage in Vitruvius which showed that very clearly.

A vote of thanks was then unanimously passed to Mr. Burgess for his paper, as also to the President for the Memoir he had furnished of the late Dr. Whewell.

AN ENQUIRY INTO CERTAIN PRINCIPLES OF ARCHITECTURAL PHYSIOLOGY,

By D. O. Edwards, M.D., M.R.C.P., F.R.C.S.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, March 26th, 1866.

In addressing this learned Society, I cannot find a fitter apology for my intrusion into a province of science apart from my own, than the declaration of Cicero, in one of his orations, that all the arts designed for the welfare of man, have a close relationship with each other. " Omnes artes," he says, " quæ ad humanitatem pertinent habent *quoddam commune vinculum;* et quasi *cognatione quadam* inter se continentur."

The contemplation of this general alliance between the various industries which, like so many different coloured threads, are interwoven in the great loom of social life, naturally yielded him the keen intellectual pleasure, associated with the apprehension of a philosophical truth, and evidently enticed him into speculations as to the affinity of the arts, as well as to the tendency of each to elevate or depress the moral dignity of the human being. Civilization had not then awakened to the perception of the modern ethical maxim, that all labour is worthy of respect; and fettered by the narrow prejudices of class, the great orator indulged in illiberal comments upon various inferior handicrafts which he considered derogatory to the character of their professors. It is remarkable, however, that he selected architecture and medicine as worthy of special commendation, on account of the moral and intellectual excellence which they call forth. He brackets both arts together in their description, as " Artibus quibus aut major prudentia inest, aut non mediocris utilitas quæritur."

I will not presume to waste the time of my present audience in further quoting the opinions of Cicero as to the comparative merits of the two professions, or in comments on his ample means of forming a correct parallel, but proceed at once to a consideration of what must evidently have been in his mind, the nature of that *quoddam commune vinculum*, that particular technical bond of union between medicine and architecture, represented in the common purpose contemplated in the physician's prescription, and the architect's constructive skill. There can be no doubt that the members of any profession would be sometimes enlightened if they could occasionally divest themselves of their habitual modes of thinking, and take a view of their proceedings from the stand-point of a neighbouring art. As the physician would be helpless without the aid of the architect, so the architect might derive useful hints from the experience of the physician.

In the remarks which I now venture to make, I of course regard the functions of the architect from a medical point of view; but whilst assuming a freedom of discussion, necessary in the investigation of truth, I beg to disclaim any tone of dictation, and advance my statements and conclusions as so many questions to be answered by the fuller knowledge of my audience.

The means employed by the two professions are widely different, but the end is the same, namely, *to aid nature in preserving the natural standard of heat in the body, which is the primary essential attribute of life.* The infant, before birth, borrows its heat from the blood of its parent, it lives in a warm bath of 100° Fahr., but directly it comes in contact with the colder air the lungs are expanded, and a new function commences, that of supplying the balance of heat which is necessary to antagonize the refrigerating influence of the atmosphere; this task, as is well known, is accomplished in respiration by the absorption of oxygen, the exhalation of carbonic acid and the oxidation of the carbonaceous elements of the blood. The constant, never ceasing task of the breathing animal is, then, the generation of heat, but this function cannot, under all circumstances, be sustained without the aid of art. The aboriginal man, whatever may have been his social condition, could not have maintained his existence without procuring shelter against the chilling radiation of the atmosphere, the pungency of the solar rays, or the sudden precipitation of aerial moisture.

In the primitive devices resorted to in such emergencies, is shadowed forth the first duty of the architect as the helper of nature, the primary essential work of producing a covering which shall be durable, opaque to heat, water-proof, and shall insure the prevalence of such a range of temperature and degree of dryness, in the abode of man, as may be consistent with the easy maintenance of the vital functions. In the fulfilment of this first purpose, he is limited in his efforts by certain indispensable conditions. Taking into account these several desiderata, I propose to arrange all the observations I have to make under six heads, some of which I shall very lightly dwell upon: 1. The nature of architectural covering. 2. The admission of air for respiration, and as an agent for the extrusion of gaseous impurities. 3. The admission of light. 4. The auxiliary use of clothing. 5. The uses of artificial heat. 6. The removal of liquid and solid exuviæ.

I here omit what I had intended to say on the modified nature of the architect's duty in hot climates, merely remarking that the same leading principle prevails, that of interposing a screen which shall intercept the passage of heat too rapidly, either from or towards the surface of the human frame, but in a manner consistent with the provisions which I have just pointed out.

Omitting any review of the exigencies which the architect may have to meet in his cosmopolitan character, I turn to that part of my subject, which I have most at heart, the sanitary state of our dwelling-houses in the great towns of this kingdom.

Ever since the severe animadversions of Erasmus, delivered three centuries ago, our habitations in England have maintained a bad reputation; but more especially the abodes of the poor, are notoriously deficient in the qualities becoming the home of a decent family. I shall now proceed to consider these deficiencies seriatim, under the several heads already indicated.

1st. With regard to architectural covering, it is well known that nine-tenths of our London houses are neither water-proof, nor sufficiently opaque to heat, to protect the inmates against the vicissitudes of heat and cold; porous unvitrified brick walls, of nine inch or less thickness, with thin slate roofs, are the best means used to keep the inhabitants dry and warm in winter, and dry and cool in summer. That this shortcoming is not due to want of constructive skill, but to the diversion of capital in other directions is evident, if we attend to the comparatively well built houses of the opulent and comfortable classes; but especially to the admirably designed and well finished store houses and other structures devoted to meet the exigencies of commerce. Those commanding piles, as seen in that handsome thoroughfare, Cannon Street, in some degree, redeem the character of London for street architecture.

I have here a table, formed by selections from the Registrar-General's returns, and which shows the deleterious effect upon life of the ill-built egg-shell habitations of the poor. The duration of life among the comfortable classes, is here contrasted with that of the mass of the other inhabitants in each of the parishes named. The average age at death, of the inmates of the better houses, reaches forty-five years, whilst that of the mass is only thirty-six, being a difference of nine years in the mean age of the two classes; a difference due, in a great degree, but not entirely, to the defects of the habitations.

In erecting a dwelling-house, I imagine, an architect should regard himself as founding a domestic fortress to endure for centuries, and to be an asylum suited for the accommodation of a family, or of a knot of families, under all the circumstances of life, for the contingencies of sickness or health, leizure or occupation, the rearing of children and the repose of old age. In the majority of cases, it should be perfected at such a cost that shelter within it should be within the means of the journeyman and petty-chapman class.

In old communities society cannot afford to supply a thoroughly good separate edifice for every family, and in the most ancient societies of Europe we find the practice adopted of agglomerating the homes of many families into the shape of a large conventual mansion under one roof.

An edifice thus imagined, should, of course, consist of strong and durable non-conducting materials, adapted to resist the action of chymical and physical forces, and equal to prevent the passage of heat in either direction. In these islands, the architect commands an abundance of means to effect his purpose. He can insure uniformity of temperature in the wine cellar and the ice-house; and in the formation of kilns he enables the manufacturer to collect and imprison an intense accumulation of calorific power, by surrounding the fire with walls of sufficient density. Why should not the same means assure, to the dwelling places of the people, the range of temperature prescribed for health and comfort?

The brick-bat is, probably, as a non-conductor, not inferior to stone, and in resistance to the chymical action of the air it is superior. Looking chiefly to London, it is the building material most eligible for the construction of a durable house. The brick I mean, however, is not the sham put into London walls, but such a cube as I have seen in Roman ruins, which have resisted time and tempest for two thousand years. Bricks, consisting of good terra-cotta ingredients, baked in close kilns, and glazed by the same vitrifying process as stone ware, might be a more costly material at first, but would be the cheapest in the long run, especially when the architect honestly intends his work to last. With such a tough opaque material I would build the outer walls of my house, at least two feet in thickness; and for moral and sanitary reasons, also all the interior partitions of the same substance. As the roof is always the weakest, as it is the ugliest part of every building, and also offers the least resistance to heat and cold, I would substitute for it the flat oriental terrace, called the Belvedere in Italy, and the Azotea in Spain, and, probably, introduced by the Saracens into the south of Europe.

Where economy of space is an object, the house should be square, and the flat terrace would also save us the loss of room which occurs in the angular gabled lofts; the symmetry of the topmost apartments would then equal that of the lowest. Contemplating the erection of an edifice suited for the accommodation of several families, and in which durability, salubrity and economy are to be insured, I would exclude, as far as possible, all building substances except brick, stone, and iron protected against oxidation by being electro-plated with copper. I would have no porous surfaces, no lath and plaster, no wooden floors, and for the doors and windows I would use wood, hardened in Kyan's patent Solution of Perchloride of Mercury. The ceilings, floors and walls, consisting of enamelled bricks and tiles, luted together with hard crystallised cement or mortar, and girdled with electro-plated iron, should present a continuously glazed or metallic surface, affording no cellular *nidus* for infectious malaria, and capable of being washed with water without creating humidity.

For securing perfect privacy, and in case of the occurrence of contagious maladies (such as small-pox, typhus, scarlet fever, &c.), for obtaining an effective quarantine, the construction of dense brick and mortar partitions, of the same excellence as the external walls, becomes indispensable.

2nd. The shell of a dwelling formed with such an architectural covering as is capable of resisting excessive radiation outwards, or the undue transmission of heat inwards, being once completed, it is still necessary, to the support of life in the occupiers, that inlets for air should be reserved. As I have already stated, the great source of heat is respiration, a function through which the carbon of the food is consumed by its combustion with oxygen. An abundant influx of air is necessary to supply this element of fuel. Dr. Meryon, in a recent publication, asserts that twenty cubic inches of air are inhaled at each inspiration—400 cubic inches per minute, during which period 150 oz. of blood are propelled through the lungs. Three hundred and sixty-six cubic feet of air, or 36 hogsheads, and 13,488 lbs. of blood permeate the lungs in 24 hours. By this process the demand of the human system for the generation of heat is answered. Lavoisier, Laplace, Sir H. Davy, and other philosophers, have made experiments to ascertain the quantity of heat disengaged from certain animals in a given time, and have satisfied themselves, by measurement, that the oxidation of carbon and hydrogen, as manifested in the products of respiration, when properly protected by opaque inclosure, is sufficient to supply the waste of heat lost by radiation from the surface of the animal. This generation of heat, however, is attended with another effect, the contamination of the air, by the evolution of gaseous excrements, which, unless speedily removed, create a stagnant malaria round the body. Each adult spoils, by the action of the skin and lungs, 280 cubic inches of air per minute. Allowing a wide margin for accidental variations, we may state the amount at 360 cubic inches. The gaseous vapours given out from the skin and lungs consist principally of carbonic acid and watery vapour. M. Valentin found that the whole quantity lost by exhalation from the cutaneous and pulmonary surfaces of a healthy man, who consumed daily 40,000 grains of food and drink, to be 19,000 grains, or 3½ lbs. Subtracting from this the pulmonary exhalation of 5,000 grains of carbonic acid exhaled over that of the equal volume of oxygen inspired, weighing 2,256 grains, the remaining 11,744 grains, or 2½ lbs., represent an average of cutaneous exhalation in the day; all which must be swept away by ventilation. The balance of 21,000 grains are disposed of in the shape of the liquid and solid excrement. Liebig calculates the quantity of carbon alone eliminated from the lungs and skin, in the twenty-four hours, at not less than 13·9 oz. These gaseous vapors, if not displaced, are inhaled again; every inhalation of used air absorbs less and less carbonic acid from the system, and this excrement consequently remains in the blood, acting as a narcotic poison; the brain of the sleeper is stupified by the circulating carbon; in the morning, he feels languid, heavy and unrefreshed, and his breath is offensive. Such are the effects exhibited in most dormitories, of which the air is at the same time most repugnant to the sense of smell. The person is surrounded with a halo of impure vapour, which requires a steady stream of air to dispel it.

This is the true theory of ventilation; sufficient pure air must be afforded, not only to support respiration, but to supply such a stream as shall carry away all the excretions from the lungs and skin. But this service is to be performed in a manner consistent with the first purpose of the architect, namely, the preservation of the normal animal heat of 100° Fahr.; and the method must therefore vary according to the temperature of the air. The colder the weather, the less is the exhalation from the skin and lungs, and the less the excrementitious vapour to be swept away. Consequently the less rapid, and the less refrigerating, is the purifying current of air required. In hot weather, and in cases of fever, where it is often necessary to cool the surface of the body, by promoting evaporation and then condensing and dispelling it, the waves of the atmosphere must be made to pass more rapidly over the surface of the animal. Thus is defined the task of the architect: he must procure for us air in such quantities, and moving in currents of such velocity, as may be exactly adapted to sustain the normal warmth, whatever may be the temperature of the hour.

It has been calculated that the human being requires to be enveloped, as in a cloud, by an area of 1,600 cubic feet of respirable fluid, as a kind of menstruum in which the gaseous excrements are to be dissolved; but as this medium is in a state of constant passage through the apartments, probably, much less space would suffice for purity of respiration.

To maintain this continual change, I have reckoned that a volume of 3,600 cubic inches, or about two cubic feet per minute, would be enough to feed such a ventilating stream as is needed for one person. Dr. Arnott supplied the Marine Artillery Barracks, at Woolwich, by means of a steam pump, with air, at the rate of four cubic feet a minute for each man; and Dr. Boswell Reid propelled into the House of Commons not less than seven cubic feet per minute for every Member of Parliament.

To supply such ample volumes of air is perfectly impracticable in houses of ordinary mould, except by admitting cold blasts through open windows, a proceeding, in the winter months, quite inconsistent with the architect's main purpose—the conservation, at a healthy standard, of the actual warmth of the apartment. According to the best medical opinions, this standard should be 60° for children's nurseries and sick chambers, and from 50° to 55° in rooms where persons are employed in sedentary occupations. Below this temperature, disease in the very young, and in the very old, is likely to be engendered.

The supply of air, that most essential pabulum of life, has scarcely won due attention from architects: it is only permitted to enter houses clandestinely, and it comes in in jets and draughts. I have thought that such an important purpose, as the supply of this food of the breath, is deserving of an especial provision, and have, therefore, taken the liberty to suggest, that between each storey of every house, a space should be reserved for the exclusive reception of air, and which should freely communicate with the external atmosphere. Between this intersolar reservoir (measuring twelve inches in depth) and each subjacent apartment, a ceiling should interpose, in which a quadrangular opening two feet wide, and reaching from end to end, should be left; and a diaphragm, or sliding hatch, moving on rollers like a sash-frame of a greenhouse, should be fitted to close this on occasion. This sliding partition should consist of three panels, each two feet wide, and which should equal in measure the long diameter of the underlying room. One panel should be imperforated, the second drilled with very small holes, and the third with apertures of a shade larger diameter. As this hatch is to move laterally on rollers, to such an extent, as to allow the quadrangular fissure to be entirely open on occasion, it will be in the power of the inmate below, by means of pulleys, to regulate the ventilation with the nicest regard to his feelings. He might shut out the air altogether, or graduate the quantity admitted to any degree, by sliding the hatch gradually over the air-way, *or atmode* proposed. A drawing in the lithographed sheet appended to this paper, displays the whole arrangement clearly. By this means, the impulse of the approaching air may be increased from a gentle wave-like motion to a brisk breeze, according to the desideratum of the moment; and the used air, ascending into the reservoir by the force of gravitation, would be carried off by the currents there prevailing.

In nurseries, infirmaries, &c., it is desirable that ventilation should be controlled and nicely measured, and I believe the power of producing this result is obtained by the conjoint use of the mode of admitting air which I have named the *atmode*, and of the horizontal smoke-sewer or *vomitorium.*

The means of accurate measurement is obtained by utilizing the evaporating property of air-currents. Evaporation and refrigeration are correlative, and the one is in fact an exact measurer of the other. Thus in Mr. Glaisher's arrangement of the wet-and-dry-bulb-thermometer, the temperature indicates the quantity of moisture in the air; the lower the temperature of the wet bulb the less is the moisture; but the velocity of the air current increases evaporation, and augmented evaporation lowers temperature.

By distinguishing the fall of temperature due to evaporation in the ordinary calm condition of the atmosphere, from the further effect due to air currents, we obtain a fine scale for noting degrees of air velocity. I take one of Glaisher's double thermometers, and protect it in a glass cylinder from the action of draughts, and I find the difference between the wet and dry bulb to indicate the humidity or dryness of the quiet air. By its side I place another double thermometer, and on the second wet bulb I find marked the further effect of evaporation produced by the moving air. The difference between the two wet bulbs exactly indicates the force of the draught. The difference between the temperature of the dry bulb, and the dew point, being divided into a scale of 100° the exact expression, for the force of calm evaporation, of the augmented evaporation due to air currents, and of the difference between the two, may be in a moment ascertained by a reference to Mr. Glaisher's tables, or by an easy calculation. (See lithograph drawing in the appendix).

The force of air current devoted to the expulsion of impure gases should be considerable, for such fluids have a kind of attraction to clothing and all porous surfaces, such as tapestry, lath and plaster walls, flock papers, and coarse deal boards. In these sinuosities, animal effluvia are decomposed, and produce and foster the *seminium* of fever, which under certain atmospheric accidents may become epidemic, and spread from the hut to the palace.

3rd. In England, the architect depends for his supply of air chiefly upon his windows; and, doubtless, there are times in the summer months when these defensive glass screens may be left open without detriment. In dormitories, in the absence of a better contrivance, it is found more prudent to resort to this simple expedient for purifying the apartments, than to inhale the offensive malaria with which they are filled.

Glass is so rapidly diathermal a substance that, in cold weather, the radiation from closed windows is so copious, that the temperature of apartments is often quickly lowered, and chilly currents of air are driven inwards from the surface of the glass. These avenues for light are also often too large for the room, and render it impossible to keep up an equable temperature. I have known many cases of fatal inflammation produced in persons sitting incautiously near closed windows, and continual relapses are induced in valetudinarians by the same imprudent act. The price of glass is now so much reduced that double-sashed windows could be supplied in the generality of houses; but where this protection cannot be obtained, the construction of windows of a size proportionate to that of the apartment, and the adoption of the invention which I have ventured to recommend, would diminish the force of the draughts thus created. Large windows and a bright light form a great luxury, and are, in some respects, salubrious, but heat is the want of every moment.

4th. In his efforts to aid nature in her struggle to uphold the normal heat of the blood, the architect has a right to expect that the inhabitants of houses should second him by protecting themselves, whilst indoors, with clothing suitable to the season. This is a care which, in England, is universally neglected; a kind of semi-nudity is practised in the house, especially by women, who often provoke the attacks of serious maladies by exposure to sudden chills in passages, halls and staircases. In the South of Europe, where often no fires are kindled in sitting rooms, the people are wiser, and invest themselves in as warm raiment indoors as in the open air. They, therefore, circulate with perfect impunity all over their houses.

To a person properly clad, a temperature of 50° would afford a genial sensation. This is a degree of warmth which is shewn, by this table, to be maintainable without difficulty where good architectural covering is aided by artificial temperature. These tables, shewing the influence of architectural covering in preserving and controlling temperature, and also the additional effect of fire, I have computed from observations, most carefully noted and recorded, for more than twenty years, at Chelsea, by the late Mr. Charles Soare, a retired Commissariat Officer, assisted by Mr. Bacon, a schoolmaster in the same neighbourhood. The neatness and accuracy displayed in these records furnish a pattern for all meteorologists, and would satisfy the exigencies even of Mr. Glaisher.

The comparative notations of indoor and outdoor temperature were made in a small house, situated in the King's Road, Chelsea, an average sixth class residence, displaying all the usual defects observable in such erections, yet the actual amount of retained heat was considerable, and the daily, monthly and yearly range of the thermometer was (as is seen) greatly lessened. From the facts demonstrated here, we may conclude, with certainty, that a house constructed on scientific principles, would insure the maintenance of a wholesome degree of warmth without much aid from artificial heat.

5th. One of the first physical conquests of the refugees from Eden must have been the invention of fire, which was soon discovered and applied by Abel in his sacrifices. Man is a cooking animal, and his digestive organs are not capable of assimilating many of the crude aliments presented by nature. The sudden and capricious changes of the atmosphere, too, arising from the effect of heat and cold upon aqueous vapour, and generating the fluctuating aerial currents, called winds, must have soon suggested the expediency of adopting artificial heat, in addition to architectural covering, as a means of aiding the respiratory organs in their work, and in sustaining a wholesome range of temperature in the dwelling house. This is a subject which has much occupied the attention of architects and engineers, and an extraordinary amount of ingenuity has been displayed in the various suggestions promulgated, with a view to make combustion perfect; to distribute its radiation widely, and to carry off the chymical products of ignition. There are many gentlemen present more skilled in the treatment of these matters than I am, I shall therefore confine my attention to a few points with which I am familiar. Notwithstanding all that has been said in favour of warming inclosed spaces, with hot water, steam pipes, air flues, close stoves, &c., the open fire is still the favorite method in the popular mind. We continue to consume our fossil-fuel coal with an enormous waste of caloric and combustible matter. Large lumps, or ingots of coal, are placed in contact and subjected to ignition, the surfaces, which are immediately exposed to the active fire, are decomposed and consumed, but the adjacent strata are heated at the same time, in different degrees; some to a degree not adequate to sustain combustion, but quite sufficient to expel the carboniferous gas which escapes up the chimney unconsumed. It has been calculated that by these losses, and the heat carried away in the smoke, a waste of 80 per cent. is experienced.

To mitigate this great loss, and to obviate other inconveniences, Dr. Arnott has endeavoured, with some success, to impart to the fire-grate some of the properties of the gas-retort, and to retain for use the carburetted hydrogen gas, and the solid particles of fuel, which are otherwise lost in the current of the smoke. With the same object I contrived my "solid gas fire," named "the Atmopyre," which I was permitted to exhibit to this Society sixteen years ago. On that occasion, I had the pleasure of showing an artificial cinder made incandescent by the combustion of hydrogen in air; a fact, indicating, as I then thought, and as I still think, the possibility of applying the hydro-oxygen fire to common use. The difficulty of economically separating hydrogen from oxygen in the decomposition of water postpones that triumph of art to the future; and our immediate care must be directed to the better management of our most comfortable, but very unscientific coal-fire.

If Dr. Arnott's excellent idea of consuming smoke could be realized, there would still remain the need of carrying upwards the products of combustion, and the impediments which I experienced in applying my *Atmopyre* are still unsubdued in all chimneys of the usual character. In consequence of these impediments, my attention was early turned to the means of ventilating ordinary chimneys, in such a way, as to command the occurrence of a constant upward draught.

The ascent of the gases generated by combustion may be impeded by two different causes. First, in a still and humid state of the atmosphere, chimneys are filled with a body of air very nearly saturated with vapour, and, consequently, so conditioned as to resist the first feeble pressure of the rising smoke and its cognate gases. This hindrance can only exist during a perfect calm, and the first wave of air crossing the chimney-top dispels it. The most frequent and pertinacious obstacle to the easy escape of smoke, consists, secondly, in the disturbing effects of air-currents upon the chimney finials, which are generally terra cotta pots, or contorted zinc tubes. It is a law in pneumatics, the necessary consequence of the universal force of gravitation, that wide and strong currents of air over-rule and attract to themselves all minor breezes. The impulse of wind is simply its local weight, but a degree of rarefaction is produced on the edge of every current, which causes an influx of the adjacent quiet air, and exerts beneficially an exhaurient effect upon the draught of flues. Such a strong gust of wind approaching an ordinary stack of chimneys, of course, displaces, by its weight, the lighter atmosphere round about, and, descending into the flue, drives down the ascending smoke. When undisturbed by such moving columns of air, the tranquil atmosphere permits the ascent of smoke, or rarer air, which obeys the law of gravitation as implicitly as floating bodies on the surface of water. It is by the lateral pressure of the colder air that the heated products of combustion shoot upwards into the sky. The proper function of the chimney is to convey the air and gases, rendered light by the heat of combustion, from the grate, where they are coerced by the atmospheric weight in the apartment, to the top of the flue, where they are immediately subjected to the lateral stress of the outer atmosphere, and either drawn away by the attraction of passing currents, or propelled upwards to the normal height suited to their levity. To the perfection of this effect, two circumstances are required, first, that the air of the warmed room shall be equal in barometric pressure to the air above: and, secondly, *that a body of air, protected from disturbing currents, shall always surround the upper aperture of the flue.* The first effect is secured by the adoption of the *atmode*, or air channel, already described; and the second result, I believe, may be always insured by another arrangement which I have invented.

I have found that, in my experiments with the atmopyre, wherever the orifice of my escape-pipe for the products of combustion entered, (a passage of some length and open at both ends), the currency of these gases remained perfect, and that in these passages there prevailed, invariably, a flow of air in one direction or the other. These facts suggested to me the idea of my *vomitorium*, or smoke *exode*, the principle of which, I think, is established by my experiments on lamps. In order that the column of smoke should disembogue itself freely from its channel of escape,—the chimney, it is necessary to prevent the rude contact of the wind with the immediate vent of the flue, and this object is achieved by the inclosure of the chimney vents in an oblong chamber, or ample tunnel,of which the calibre must rather exceed twice the sum of that of all the flues. The mouth of each flue should project, in the shape of a collar, into this receptacle, which would extend from one parapet to the other, and each end would be on opposite aspects of the house. Each mouth of the tunnel may be closed by a perforated door; and on either side, on a level below the collars of the flue, there should open several holes of a dimension proportionate to the number and size of the flues.

A careful observation shows that the phenomena exhibited in my apparatus, as well as by the experiments made on two small houses in Chelsea, occurs as follows, and are well displayed in the lithographed illustration. The chamber of the vomitorium is filled with air of the temperature and density of the atmosphere, and proceeding from the lateral holes, or from the foramina, at either end. This air is either in a state of gentle motion along the tunnel, or moves in a more rapid current from end to end, in which last case it exerts an exhaurient, or suctional force, upon the flues, and, consequently, vivifies combustion in the grates below. This is a power which can be utilised, in vigorously ventilating the abodes of the poor, in spite of their perverse hostility to the admission of air. The fires being kindled, the jets of smoke issuing from each flue rise to the arcaded roof, sustained by the cushion of cold air, already existing, and which is constantly fed from the sources described. Finally, the smoke escapes outwards along the roof of the vomitorium, and the superior apertures at the obturated ends; making its exit, sometimes at both ends, when the atmosphere is tranquil, sometimes at one or the other end, when the commanding current is active. This succession of effects seem due to the maintenance of an equilibrium between the air within, and the air without the house, and in theory, is as simple in principle as the adjustment of weights in the scales of a balance.

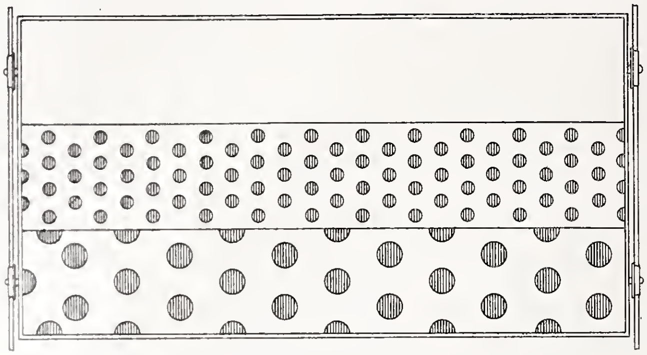
6th. I have shown what an important agent, in the production of animal heat, *oxygen* is, but its absorption into the blood would be absolutely sterile, unless it were chymically married in the latent recesses of the living frame with its consort, *carbon*, which can only emanate from the digestion of certain viands by the stomach, and their nutritious principles being conveyed into the blood. It is the *charcoal burning* which occurs in the course of the circulation that generates the vital heat. The importance to health of a proper preparation of food is therefore patent. A deficiency of skill in the art of cookery is everywhere observable amongst the wives of our working men. Hence arise immense waste, discomfort and domestic contentions; and it is a consideration, I think, which may be urged on the architect and economist, whether, as experience proves, the erection of a house for an aggregate of families is more advantageous than the construction of a separate small dwelling for each family; the same principle does not indicate the establishment of general kitchens, where wholesomely cooked food may be purchased by all. I believe such undertakings would prove excellent speculations, would be a convenience to many middle class families, and, most certainly, greatly promote the cleanliness and comfort of poor householders.

7th. The invention of means for carrying off the solid and liquid excrements of the animal frame is, of course, a want not less urgent than the extrusion (by sharp currents of air) of the gaseous exhalations. The first differ from the last only in the fact that hollow viscera are provided for their temporary retention in the body; they are all alike, in a continual state of elimination from the blood. When once ejected from the body, and exposed to the action of the air, heat and moisture, they rapidly decompose, and generate vapours equally tending to provoke the outbreak of disease. As all these *exuviæ* are convertible into food for plants, it is certain that, as soon as chymists shall have invented a formula for this conversion, the value of the products will awaken the capitalist into efforts for their utilisation; and the opprobrium will no longer rest upon this metropolis, of throwing away "native guano," equal in worth to three millions sterling annually.

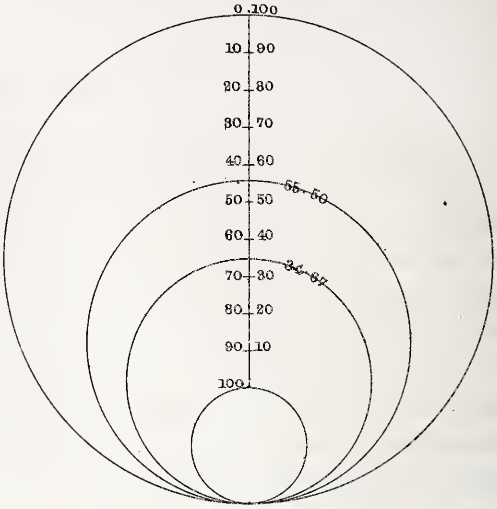
There is nothing, perhaps, in the habitations of the poor people, more urgently calling for reform than those retreats where the human being is called upon to perform his most humiliating function, an act in which he is placed on a level with the most humble of his mammalian fellow creatures, and with which nature has associated a feeling of shame. In the performance of these physiological acts, it is desirable that the individual should be protected from gross familiarity by decent seclusion, and that self respect be sustained, by the supply of means for personal cleanliness and purity. The wretched boxes which are placed in our small houses for the gratification of these wants, are deficient in all the postulates for modest decency and health, they are in fact, prolific sources of diseases. These cabinets ought to be capacious, well supplied with water, ventilated, sufficiently secluded; and each dwelling should possess a number proportionate to the number of inmates.

8th. As the builder of cities, and as the cause of accumulated edifices, and a concentrated population, the architect is responsible not only for the hygiene of particular dwellings, but also for the general salubrity. It is for him to supply remedies for the evils which his own acts produce. We look to the ingenuity of this artist for the preservation of wide streets, and open spaces for air and exercise, for copious supplies of water, for perfect facility of drainage, and for every aid that can be required for the health and cleanliness of the population.

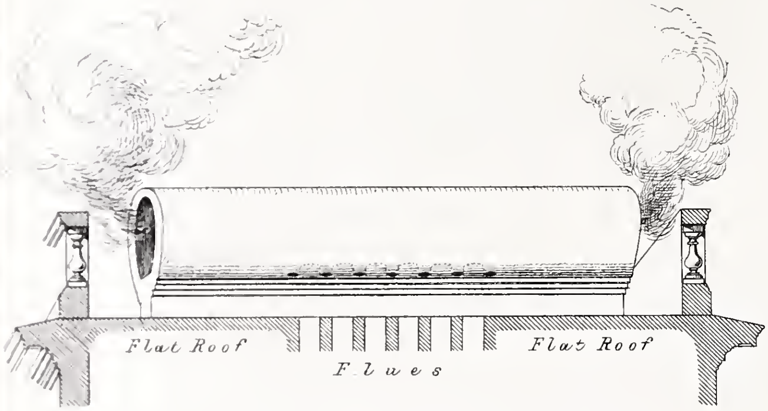
From the enlightened influence of the architect we may hope for the abatement of that greatest evil of towns—the ground rent. The accidental proprietor of land in the neighbourhood of a growing town becomes, without the slightest personal merit, a magnate of wealth; by competition his land commands a fabulous price, which in future years imposes an absolute veto upon all improvement. Now the improved value of this person's land is entirely the work of society, and society has an undoubted right to measure out its benefits to this its member. The law of supply and demand is good, but there are social considerations which are paramount to it.



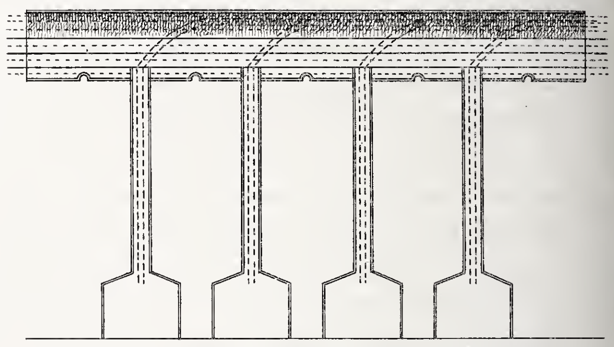
The Ventilating Diaphragm.



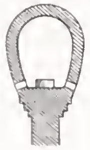
The Pneumatometer.



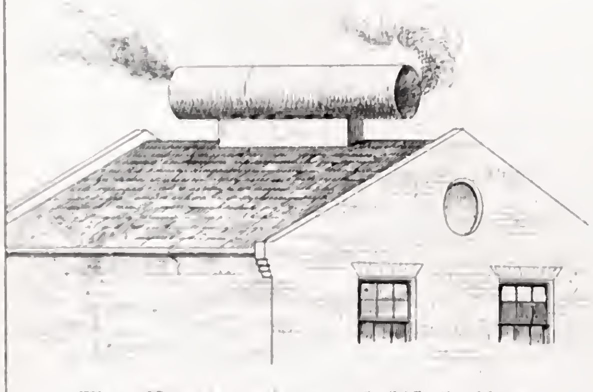
Vomitorium or Smoke Sewer.



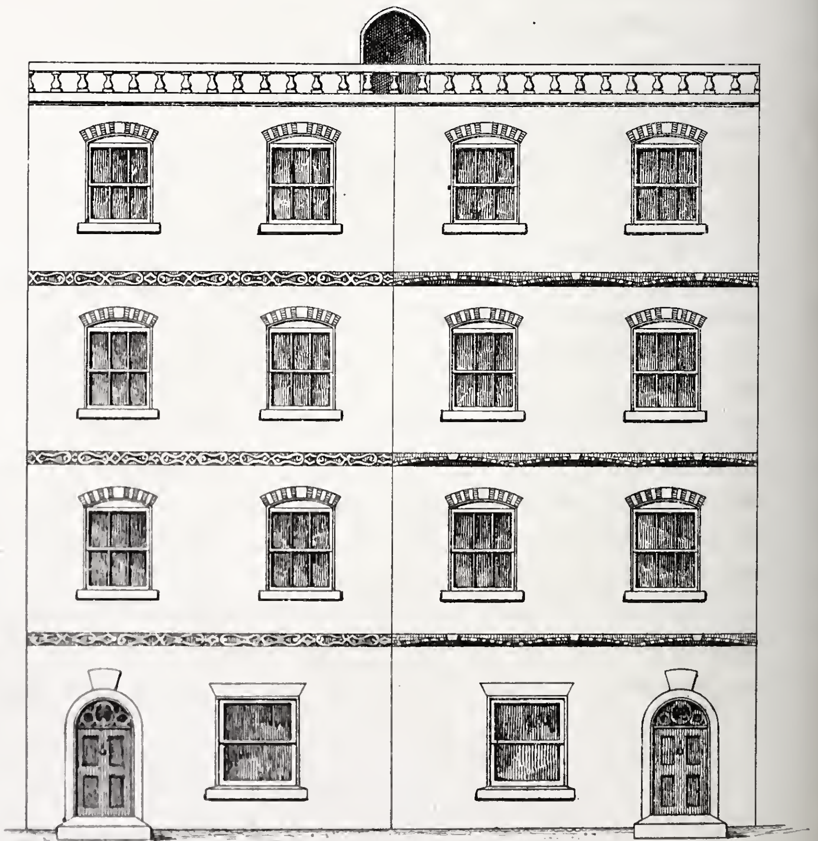
Inside of the Vomitorium.



Transverse Section.



The Vomitorium of M^r Callow, in action.



Elevation of two Houses, showing the Air Inlets or Atmode; and a Common Vomitorium.

J. Jobbins

In such an unprecedented hive of human beings as London presents, every facility for cleanliness in person, clothes and habitation, should be supplied, not only in dwellings, but by such general establishments as baths and wash-houses, the erection of which is clearly within the municipal obligation of parishes. The accumulation of household dirt, and personal filth, is the result of the close agglomeration of the population in small spaces; it is produced by society, and society is bound to provide an adequate remedy.

The sketch of a house, which an artistic friend, eminent in another branch of pictorial art, has condescended to make for me, and which is shown in the appendix, is intended to show the appearance which a habitation, constructed in the way I suggest, would present. The *vomitorium* and the *atmode* are both represented, and shown not to be eyesores. A staircase of stone is supposed to ascend from the basement to the terrace, and to be the general approach to all the apartments. It has been objected to the idea of the "common" staircase, so universally prevalent on the continent, that it is repulsive to the habits of our people. The vanity of this objection is immediately shown, by the fact, that thousands upon thousands of persons, in London, do actually live in lodging houses, and use a common staircase, much narrower and more inconvenient than the one here proposed; and that these persons are of various ranks and means, a fact which brings the working people into proximity with the more opulent inhabitants, and places them within the compass of kindly counsel and sympathy.

It has been said, and perhaps truly, that the single sentiment of charity, notwithstanding the example of Mr. Peabody, is not powerful enough to produce such an outlay of capital, as the erection of solid and durable houses of this class implies. The wretched system of building dwellings upon leasehold security, instead of freehold, is the cause that the architecture of these edifices is so unsatisfactory, most of these houses being built merely with a view to sale, and a quick return of the capital with interest. It is rarely that a man erects a house for himself on his own ground; and no man ever thinks of building houses upon a large scale as a patrimony for his family, as many noblemen in France, Spain and Italy do. Speculating builders, even at the Court end of London, erect showy rows of mansions, decorated with the ordinary architectural millinery, but deficient in scientific construction, and intended only to last a limited time. Great expense will never be incurred in the production of ephemeral structures, but when ample revenues are to be created for centuries, in the form of estates in houses, then large investments of capital would be devoted to the construction of mansions, and the best materials, with the most skillful workmanship only, would be employed. If we look at the old cities on the Rhine, and in Belgium, and at many large Continental towns, we shall see that such investments are both safe and profitable.

Our vicious system of building, in England, is so rooted in the habits of small capitalists, that it will, probably, require an act of the legislature to restrain it. And this interference will not be long delayed, when public opinion becomes conscious that policy, as well as philanthropy, suggests that it is desirable the homes of the poor should be improved. That society is not safe, where the majority of its members do not very obviously see what benefit accrues to them from its action. There are signs which indicate that contentment is not the master sentiment in the minds of our industrial classes. Handsome churches are erected, and gorgeous rituals are invented to attract them, but they still hold back. Museums and literary societies are formed for their edification, but these compete too feebly with the fascination of the gin palace; and the poor man has no pleasant sentiment associated with the word *home*, because, to him, it is cramped, dirty and unhealthy.

Is it quite visionary to hope, that all the forces of this great English society, actuated by all the motives which press themselves upon our attention, are strong enough to accomplish such a reform in our domestic architecture, as that the hearth and home of the poor man may become the abode of peace, health and contentment, the nursery of piety and the pure affections? I believe it is not. Perhaps we have all all been too solicitous to garnish, each his own little cell of self-interest, and careless of the security of that great social dome that should cover us all? Happily this supineness is now dispelled and the public heart is pregnant with great designs. It is felt that too great a repulsiveness has been allowed to grow between the several ranks of our people. They have been too much segregated, and the several ranks do not know each other, or appreciate their mutual virtues. In all coteries, there prevails a desire for reconciliation; and from my long intimacy with the character of our working men, with their good sense and right feeling, I feel sure that all efforts undertaken, with earnestness and in a proper spirit, will satisfy their judgment, and call forth their gratitude and affection.

I.—Table, *showing the comparative Length of Life, of the well-housed inhabitants of certain districts; and of the mass of inhabitants in the same districts, including paupers.*

Description of House.	NAMES OF DISTRICTS.												
	St. James's.	St. Giles's.	St. George, Hanover Sq.	St. George, Southwark.	Marylebone.	Whitechapel.	Greenwich.	Poplar.	Strand.	Bethnal Green.	Kensington and Chelsea.	Islington.	Rotherhithe.
	MEAN AGE AT DEATH.												
	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.	Yrs.
Comfortable dwellings…………	42	42	45	43	46	47	48	43	43	46	45	42	49
Other houses …………………	37	34	39	27	30	32	45	35	33	33	32	35	39
Difference………………………	5	8	6	16	16	15	3	8	10	13	13	9	10

Average life of the opulent………………………	45
Ditto of the lower class ………………………	36
	9

2.—*Comparison of in-door and out-door temperature, and relative humidity during the three hottest and the three coldest months, in Chelsea, compiled from the observations of Mr. C. Soare and Mr. Bacon, made during* 20 *years, from* 1827 *to* 1846, *showing the effects of architectural covering.*

Months and Seasons.	Mean Temp. out of doors.	Mean Temp. in-doors.	Wet bulb Thermo.	Dew point.	Diff. between in-door and out-door Temp.	Relative humid. in-doors.	Relative humid. out of doors.	
January	37·02	43·73	34·14	30·02	6·71	68·72	81·00	
February	39·39	46·44	35·39	30·30	7·05	65·40	77·00	
December.........	40·39	46·64	35·80	27·60	6·25	74·89	85·09	
Average	38·93	45·60				69·67	81·03	Average humidity for three months out of doors
		38·93					69·67	Ditto in-doors
Mean difference		6·67					11·36	Gain in dryness
June...............	59·99	65·11	47·99	37·40		57·70	62·30	
July	63·48	68·18	51·95	42·20	4·70	61·90	60·90	
August............	61·27	66·97	51·27	42·60	63·58	63·58	69·50	
Average	61·58	66·75			5·70	61·06	64·23	Average humidity out of doors
		61·58					61·06	Ditto in-doors
Mean difference		5·19					3·17	Gain in dryness

3.—TABLE, *showing the difference between natural temperature, and the temperature maintained by architectural covering and artificial heat. The observations were made at Torquay*, 1826-27.

State of Thermometer.	Nov.	Dec.	Jan.	Feb.	March.	April.	The facts are supplied by Sir J. Clarke, F.R.S.
Mean natural temperature of the month	49·90	48·36	45·91	45·48	48·20	52·82	
Ditto in-doors	63·90	64·52	63·56	62·60	63·16	67·64	
Gain in absolute heat	14·00	16·14	17·65	17·12	14·96	14·82	Mean temperature raised
Natural monthly range ...	29·00	18·00	25·00	29·00	23·00	26·00	
Range in-doors	7·00	6·00	6·00	11·00	9·00	6·00	
Degrees gained in steadiness	22·00	12·00	19·00	18·00	14·50	20·00	Diminution in monthly range
Mean natural daily range	5·00	5·00	5·00	6·00	8·00	11·00	
Ditto in-doors	1·00	2·00	1·00	3·00	3·00	2·00	
Diminution of the mean daily range	4·00	3·00	4·00	3·00	5·00	9·00	
Natural extreme daily range	10·00	12·00	13·00	16·00	23·00	12·00	
Ditto in-doors	4·00	4·00	4·00	7·00	9·00	5·00	
Diminution in extreme daily range	6·00	8·00	9·00	9·00	14·00	7·00	Gain in steadiness

Mr. HENRY BURNELL, Associate, reported to the Society, that a *vomitorium* formed of a large zinc tube of a calibre equal to twice the area of the flues, according to the proportions named in Dr. Edwards's paper, and with six round holes on each side to admit jets of air, had been erected by Mr. Callow, of Chelsea, on two houses in Alpha Place, Flood Street, Chelsea. These cottages were badly ventilated, and had chimneys of a very bad character. They are also placed near much taller houses. Since the construction of the *vomitorium*, their ventilation has become efficient, the grates act briskly, the smoke escapes freely, and in the rooms without fires, no down draughts occur. In Mr. Callow's opinion, so far as the experiment goes, the success of the *vomitorium* is complete. The action of the side-apertures is remarkable, the air-currents let in through them impinge against the collars of the flues, and are reflected upwards, producing an exhaurient influence upon the flues, propelling the smoke upwards and outwards, and thus rendering down-draughts impossible.

Mr. JENNINGS, Fellow, rose to propose a vote of thanks to the gentleman who had so kindly given them the paper. It was of the utmost importance that they should have every possible assistance from the medical profession, and obtain any information they could give respecting the erection of buildings, and what they considered desirable with respect to sanitory arrangements. They were, therefore, extremely obliged to Dr. Edwards for this paper. At the same, time he must state that his own views, on some of the points referred to, differed very materially from those of the author. He (Mr. Jennings) had had some little experience in respect of the question of ventilation and other sanitory considerations, in connection with military head quarters, accommodating thirty-six families, and officers' quarters, in one building, as well as in factories, almshouses, and what were called model cottages, and he could not, at starting, agree with the idea that it was an expedient thing to adopt paved floors, and the foreign system of plaister, in preference to our English wooden floors: that this appeared to be so peculiarly a medical consideration, that he hardly liked to express an opinion that wooden floors were more healthy than paved: he had always understood paved floors to be regarded as a serious evil in rearing young children, in a cold and moist climate. In going over the City prisons he had heard the warders complain of the asphalte floor "drawing" the feet: that was, probably, owing to the conducting powers in that material. Certainly, there was discomfort to the persons who stood upon it. Then, on the subject of ventilating the cottages of the working classes, he believed the great difficulty was to keep the ventilation open when it was provided. Those who had built cottages with every convenience and every appliance for the most perfect ventilation, found that the ventilation was pasted up if it was within the reach of the occupants. The real difficulty was not to provide a proper supply of air to the inmates, but to get them to use it when supplied. On the subject of materials for building, he thought it worthy of consideration whether hollow bricks might not be used to a much larger extent than was the case at present. He believed they would be a great means of counteracting the effects of extreme alternations of heat and cold within the dwellings; he believed building walls with bricks on edge, so as to make them partly hollow, tended to keep the houses so constructed warmer in winter, cooler in summer, and drier throughout the year. He had found 14-inch walls the most convenient for hollow walls, with the bricks 14 inches long, which are now specially made for this purpose. Then as to the flat roofs, he could not think there was any advantage in adopting that form. They were more expensive than the open roof, and, he believed, if proper arrangements were made, the open space between the ceiling and the roof was very useful for ventilation, and also checked any great effects of heat and cold. Of course it would be more effectual for both purposes if they put on a sheet of felt between the rafters and the tiles or slates. It was extremely difficult, apart from expensive construction, to prevent the wet from getting through a flat roof: unless it was first-rate work it did not succeed, but, if executed in the best manner, it would not assist ventilation. Then, again, making a chamber to receive the air between two floors: he was afraid that the draught coming from beneath the floor would hardly be prevented, and would not be found pleasant; the object generally was to admit the air into a room above the level of the head. He believed if the air was admitted at a higher level it practically ventilated more than from below, though theoretically it was not so. Another point of ventilation was, the size of the aperture for admitting the air was of the same size as that for the exit of the vitiated air: he had found it fail in a large workshop. The reduction of the aperture for the entrance of the air to one half, in that case, occasioned it to work perfectly. On the subject of windows, no doubt there were many evils connected with them, one, however, could be provided, in a great measure, by the introduction of a thicker quality of glass, which would present greater resistance to atmospheric influences, and also be less liable to fracture. Everyone must have found a room much warmer with plate glass in the windows, and the great reduction in the cost of glass enabled thick, if not plate glass, to be used for the commonest purposes. The question of chimneys is a very important one, and he believed the plan proposed in the paper was the most perfect of all if the flues were in use; but suppose there were two flues with fires, and the other two were without fires, and suppose there happened to be a room which wanted a supply of air, the opening into a well staircase, the staircase acted as a long arm of a syphon, and would very soon fill the room with smoke from the down draught, particularly as the staircase would, probably, supply the air for the rooms with fires. The great object should be to heat the passages instead of heating the rooms. If they heated the passages sufficiently, and the warmth entered the rooms, they occasioned not only more ventilation but made a more healthy house than when the rooms were heated by separate fireplaces. Another object was to bring pure heated air into the room. On the general question of obtaining this warmed air, if they could accomplish it by double flues, that would be the best thing; practically, this had not been done because it was too expensive, but in theory it was perfect, and no doubt it would eventually be accomplished, and they could, at all events, be employed in the higher class of houses. He begged personally to express his thanks to Dr. Edwards for bringing this subject before them.

Mr. W. WHITE, Fellow, in seconding the vote of thanks, remarked that, although much of the details could not be called architectural, yet there were several subjects treated of in the paper sufficiently associated with architecture to make them of use and interest to this Institute, especially those points commented upon by Mr. Jennings. It was scarcely clear whether this draught was to come in through the ceiling, or through the floor, as Mr. Jennings supposed. [Dr. Edwards replied, it came down from the ceiling.] That made all the difference; and it was simply following out an old device in the shape of a square tube carried through a room beneath the ceiling, perforated in the sides, which had the same effect as the mode proposed, and as he (Mr. White) thought with much simpler construction. As regarded the draught of the chimneys, if it so happened that these [referring to diagram] three fires were alight, and the other one (away from the wind) was not lighted, it appeared to him that this room would require a supply of air, which it would still, probably, receive from the chimney above, and, consequently, might draw down smoke. If the other fire-place, away from the wind, was alight, the others not being lighted, it might create ventilation by displacing the air above. But he thought the same remedy for a smoky chimney, by the prevention of down draughts arising from wind, was as easily effected by a plan he had adopted, by covering each flue at the outlet, transversely, by a gable projecting over the sides of the flue, through which the wind passed. The only thing to be careful of in that, was not to have a level space on the outside of the flue for the wind to collect upon, but it ought to slope upwards towards the flue, so that if the wind came on the incline, the air would rush upwards to the ridge of the gable and pass out. There was one other question, which was rather of a sanitary than an architectural character, yet practically connected with the building of dwelling houses, that was with respect to the disposition of all offensive drainage; and it seemed to him that the plan discovered and patented by a country clergyman, in

Dorsetshire, would be, if carried out by the nation at large, a great blessing to the country: that was the substitution of earth closets for water closets. *Earth* (not sand or ashes, or anything of that description), but gypsum or clay, or common vegetable mould, sufficiently dry to pulverize, it was found, would absorb so effectually all excrementious matter, that if dried again it might even be re-used seven or eight times without any effluvia arising from the drying, and so effectually that the presence of anything offensive in it could not be detected. Many present, no doubt, were acquainted with the discovery of Mr. Moule, but he was glad to take this opportunity of calling some attention to it.

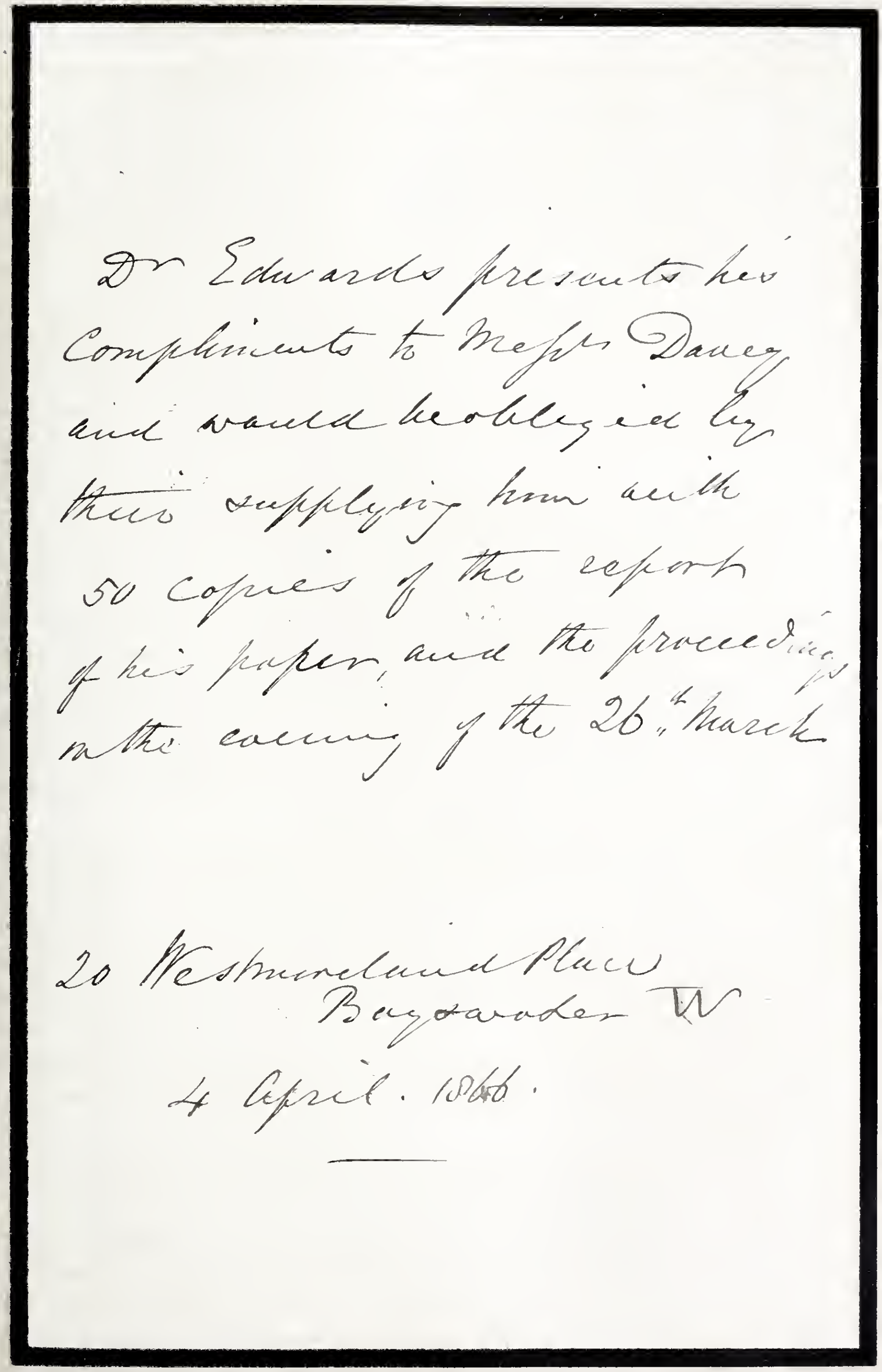
Mr. W. A. Boulnois, Fellow, said, the only subject he would remark upon in the paper of Dr. Edwards, was the preference he gave to the building of freehold houses, by freeholders, over the building upon leaseholds by leaseholders. His own opinion was that, if by any accident we had fallen into this system a hundred years ago, we should have been immensely behind in our position to that we now attained in house-building in this country. It was the competition among householders to make their houses rather better than their neighbours which involved with it, as all competition did, the very best system they could adopt to meet the requirements of the age. The renewal of houses every 80 or 100 years, or their re-modelling, was an immense advantage. And when they looked at what had been done in Paris, and saw masses of buildings erected by freeholders, with small apartments and inconvenient arrangements, they must rejoice that even in such localities as Bethnal Green, or London over the Border, to select the worst instances, small houses, at about £30. a-year, had been put up, which were far preferable, as habitations for the working classes, to the fourth, fifth and sixth floors of the Paris houses. The arrangements abroad, particularly in Spain, which had been specially mentioned by Dr. Edwards, were dreadful, and no sanatory considerations seemed to influence the freeholders in building them. The only question which actuated the freeholder was to arrive at the greatest amount of lettable space. He should, for his own part, be sorry to see a change in our system in this respect. He thought, from the largest class of houses of £800. a-year, of which many were now being erected on leaseholds, down to the smallest of £20. or £15. a-year, though, doubtless, with the latter much remained to be desired, we had much better habitations than any of our continental neighbours.

Mr. H. H. Burnell, Associate, remarked that the flooring of the houses for the poor was always the great difficulty. It occurred to him that the most suitable was, that which could be easily and thoroughly cleansed; by houses for the poor, he meant those inhabited by the lowest class of labourers, earning perhaps 18s. per week; those who, upon the receipt of the Saturday night's wages, habitually drank to excess, and whose domestic habits, under such circumstances, were filthy. How could cleanliness be maintained with a wooden floor with interstices. It was not the comfort of the thing. If he could insure the floor being well cleansed, he would certainly prefer a wooden one; and amongst the class of tidier habits they might be adopted: but the case they had to meet was that of the class who lived in confirmed habits of uncleanliness.

Professor Kerr asked what would be the rent of such houses as Mr. Burnell was referring to.

Mr. Burnell replied, about 2s. per room per week.

Mr. Thomas Morris, Associate, thought the question of the use of hollow bricks was deserving of great consideration, inasmuch as the atmospheric air confined in the cavities was known to be the best non-conducting material that could be employed; and thinner hollow walls would, therefore, answer the purpose of solid brick walls. The old style of building wooden houses was on this cellular principle; and he had no doubt whatever that the old yeomanry of England had some of the most comfortable residences that were ever erected, in consequence of the equability of temperature due to their cellular construction. They would be cheaper, too, than brick buildings; so that when it was the object to construct economical, and at the same time comfortable dwellings for the use of the labouring classes, he believed the re-introduction of wooden houses, in suitable localities, would be of very great utility.



D^r^ Edwards presents his Compliments to Messrs Davey and would be obliged by their supplying him with 50 copies of the report of his paper, and the proceedings on the evening of the 26th March

20 Westmoreland Place
Bayswater W
4 April. 1866.

The vote of thanks having been unanimously accorded to Dr. EDWARDS for his paper, that gentleman rose and expressed his obligations to those who had discussed the views he had advanced. He had, he said, no interest in the subject beyond the solicitude which, as a medical man of fifty years experience in London, he naturally felt in the domiciliary condition of the poor. No one could pass through this metropolis, and look at the variety of wretched houses which the poor occupied, without feeling humiliated, especially if they knew the nature of the interiors of them. He thought, if capital were employed in the erection of large conventual houses, in blocks or terraces, of the best material and on sound principles of construction, such houses might be made to pay a good return upon the capital, and, at the same time, afford convenient dwellings for the working classes at rents within their means. He knew the houses of the poor were, for the most part, wretched and miserable abodes, the arrangements within them being totally inadequate to the common decencies of life. There was nothing like privacy, because, with two families living on the same floor, the partitions were so thin that they were penetrable by the slightest sound. He had no objection to a moveable wooden floor, over the paved one: but the objection to the wooden floors was, that they were never kept in a wholesome state of cleanliness, and a perpetual malaria issued from them. He spoke chiefly of the dwellings of the thoughtless, improvident and dissipated class of the poor, who lived but for the passing hour. The suggestion of hollow bricks, he thought, was an excellent one, and the introduction of open air spaces in the walls would, he believed, be very beneficial. With regard to letting in the air, upon the plan he suggested, it could be regulated with the greatest nicety through the *atmode*, or opening of the ceiling. The objection that had been taken, that the flues in which there was no fire burning would be subject to down draughts, he admitted, would undoubtedly obtain, were it not for the arrangement of the apertures he had provided on the side of the *vomitorium.*

Mr. JENNINGS remarked, if there was a staircase to form a funnel from the room at the same time, it would not act unless it was a syphon.

Dr. EDWARDS, having further explained his plans on the drawings by which the paper was illustrated, added, that this was an experiment of his own, and any gentlemen who would do him the favour to pay a visit to Mr. Callow, builder, of Chelsea, might see it operating, and judge practically of its efficiency. He could not think the architecture of houses was satisfactory, when he looked at the roofs of London, and surveyed the long rows of cottages and wigwams which were provided as habitations for the majority of the London millions.

Mr. BOULNOIS said, the great service which the President had rendered to the profession in his place in Parliament, induced him to ask that gentleman whether there was any probability of a change in the arrangements of the Commissioners for the erection of the New Courts of Justice with respect to the enlargement of the competition for the designs of that building: if so, it would be a great boon to the younger members of the profession, and it would be satisfactory to hear, before the Easter recess, that such an enlargement of the competition was contemplated.

The PRESIDENT, Mr. A. J. B. BERESFORD-HOPE, M.P., was happy to be able to reply, that the morning after the discussion took place in the Commons, he was informed by one of the Commissioners, that, in consequence of the opinion expressed by the House, it was intended to alter the conditions with respect to the competition for the designs for the New Law Courts. In the first place, the prohibition imposed upon the competitors not to engage in private practice for three years was to be abrogated; and, in the second place, it was intended that the number of competitors was to be largely increased.

ON SOME OF THE ECCLESIASTICAL MONUMENTS OF PARIS ERECTED DURING THE MIDDLE AGES, AND ON THE PRINCIPLES OBSERVED IN THEIR RESTORATION.

By George R. Burnell, Fellow, M.I.C.E., F.S.A., F.G.S., &c.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, April 16th, 1866.

The municipal authorities of Paris seem to be actuated with so much of the desire of improvement that has lately "come over the spirit of their dream," and this desire takes so singularly the shape of a tendency to modernizing everything that they touch, that the traces of Mediæval Paris are gradually disappearing, and the buildings of that city are, one after another, losing their original character. It seemed to me, therefore, that some interest might be excited if the enquirer could be led to examine the traces of the past that still survive; and the ecclesiastical monuments appeared to me to be especially worthy of attention, as indicating the thoughts and feelings of the population, and as partaking more of the character of the times during which they were erected, or in which they have been modified or restored. In the following paper it will be my effort to trace the past history of the Paris churches, and to notice the changes that have successively come over the French people in all that relates to the class of motives, so far as the artistic expression that is given is concerned. It is not pretended that any order of a chronological nature is observed in the subsequent remarks; the various churches are described as they were successively visited on the occasion of a late visit to Paris; styles and ages are mixed in strange confusion; but this very want of system lends a charm of actuality to the class of observations that are called for by the occasion.

The first church that is thus brought under our notice is the church of St. Eustache, which has been lately disengaged from the strange mass of buildings that surrounded it, and has been the object of the efforts of the town to decorate and restore it. This is not, strictly speaking, a remain of the Mediæval times, for the spirit that has presided in designing the church of St. Eustache is evidently that of the Renaissance, though the proportions of the building, and the general organization of it, are decidedly Gothic, or more correctly speaking, Mediæval. Like many of the churches in Paris, also, the west front of St. Eustache is a two-storied, semi-classical screen, that harmonizes as well as it may with the internal disposition of the church; but which is a rather picturesque specimen of the taste of the first years of Louis XV. The body of the church, which was commenced in the year 1532, (it is said under the direction of Dominique de Cortone, commonly called Boccador, the architect of the original portion of the Hôtel de Ville,) is composed of a large Latin cross, formed by the intersection of the nave and choir, and the transepts; to which the aisles are added, in a double row, and the lateral chapels are introduced wherever the plan of the building would admit them; the Lady Chapel is complete, in the style of the rest of the building, and the west end is a distinct composition designed by Moreau, architect of the city, in the year 1754. The nave has five arches; the transept has two, with the length of the lateral chapel in addition; the choir has three arches, in the part before the semicircular apsis which is constituted with five arches; the whole of this is continued up, and it forms a triforium and a clerestory, which allows the thrust of the roof to be carried down to the walls of the lateral chapels by a series of flying buttresses. It is very singular to observe the evident attempt that was made by the architect to reconcile the classical details that he was led to adopt with the spirit of the old architects; all the details are, in fact, designed in the strictest style of the Renaissance as practised in France, but they are adapted with marvellous skill to the principles that had prevailed in the cathedral buildings of the past ages. There are, in this church, columns formed of unions of pilasters, and bases, surmounted with their cornices, which are repeated in the height, so as to afford the springing of the pointed arches that span the nave. The marked transitional character of this building is, in fact, the most interesting feature of the composition, and it has been studiously preserved throughout the recent works for the repairs and re-decoration of this church.

The works that have lately been undertaken for the completion and embellishment of St. Eustache are of the most elaborate character, and they may serve to illustrate the spirit in which the French proceed in the preservation of their ancient structures. Encaustic painting, gilding, oil painting, and stained glass are employed in lavish profusion; the sculpture is restored in about the style of the times in which the church was built; and the wood-work is executed in the same manner as the original. But with all this, there lacks the air of a reality. Generally speaking, the tone of the decorations is, in this church, more rich, and consequently more favourable, than is customary amongst the French architects at the present day; which may be attributed, perhaps, to the greater number of the oil paintings, and to the fact that this building receives a flood of light, from its position immediately upon the Halles Centrales. But the effect of the decorations is, on the whole, cold; for the greenish tints that prevail in the stained glass tend to diminish the warmth that would otherwise be communicated by the oil painting. Attention may be called to the organ case, in particular; it is a noble specimen of joiner's work, and in good keeping with the surrounding objects; it is, however, too laboured, and wants spontaneity of feeling; which reproach may, by the way, be addressed to all the works recently executed in this church.

The church of St. Germain l'Auxerois is the next monument of the middle ages that we come to, and it is more decidedly Mediæval in its design than the church of St. Eustache. It is built in the style that immediately preceded the introduction of the Flamboyant, and is reported to have been erected under the English occupation, about the year 1423; but there is little trace of the influence of the invaders. In the month of February, 1831, the mob plundered and devastated this building, but it was repaired and restored to the service of the Catholic church, under the care of M. Baltard, in 1837; subsequently, it has been cleared of the houses that were built against it, and the strange jumble of the Marie of the Arrondissement has been erected, with its tower, by the side. The church of St. Germain l'Auxerois is remarkable for the entrance, being under a porch, composed of three large arches, and two smaller ones, that have muniment arms over them; the entrance to the main building is at the back of the porch, which has been painted in fresco, (unsuccessfully it may be added,) and the door cases are ornamented with niches and carvings in great profusion. The double aisles are marked in this church, with the lateral chapels; and there is a transept separating the choir from the nave; but the effect of the building is low, and crowded, and the recent works executed here have rather increased this effect. The details of the foliage, and of the mouldings are, however, very charming, and the tracery of the the windows and doors is well worthy of study; altogether, the church of St. Germain merits a careful examination; the great rose window, and the façade towards the west, especially. This is the chapel of the Louvre, and derives an interest from that fact.

St. Germain des Près is nearly the oldest building in Paris. It is said to have been erected about the commencement of the eleventh century, by the Abbé Morard, but it was not till the year 1163 that the dedication of the church took place. There remain many of the original parts of the work, particularly about the great tower and the arches of the nave; but there have been subsequent additions, which appear to have been principally of the end of the twelfth century, and in 1653 there were considerable works executed, and these last are easily distinguishable on account of the imitation of classical antiquity that then prevailed. The plan of this church is of a Latin cross, arranged in the usual style of the Paris churches, with five arches in the nave, that rise above the two side aisles, on either side, with a clerestory. This is succeeded by a transept, that is made of the width of the lateral chapels in addition; and the choir is continued with the same width as the nave, the side aisles, and the chapels, for the space of four openings, where it is terminated with a circular apsis that allows the Lady Chapel to be formed behind the altar; the apsis has six arches. The entrance is under the great tower, situated at the western end, and the doorway is a good specimen of the architecture of the period of the building the original part; the length, including the space occupied by this tower, is about 98 mètres, and the width of the church, without including the lateral chapels, is about 32 mètres. The piers and arches of the nave and choir are strongly marked by the style of the Romanesque period, but the arches of the apsis are of a later period; it is remarkable that the centre lines of the choir and of the nave do not correspond in direction, the axis of the choir inclines a little to the south. The general character of the architecture of this church may be said to be Romanesque, though some of the details are of the early pointed style; and the history of the development of French architecture can very well be studied here.

But in this case, again, the modern restorers have been at work, with all their restless desire to make everything look new and perfect. The carving of the capitals, and the other places where foliage is introduced, has been ruthlessly modernized; the painting of the walls has been handed over to the care of the same persons who have spoilt the effect of the churches by their injudicious assortment of colours; whilst the stained glass is introduced without any reference to the original design of the building, apparently for the sake of employing that material, whether it had been originally employed, or no. The works of sculpture, it is to be observed, are not executed by men who are accustomed to treat the designing of the ornaments that they are employed upon as works that may occupy their whole soul; they want the *informing spirit*, and their works are stiff and lifeless, though very correct. The paintings that are executed in the chapels are obliged to be toned down to the general effect of the church, and this is of the universal greenish grey tone now universally adopted in Paris. The decorations of St. Germain des Près, in fact, are clever imitations, they are nothing more; and they leave upon the mind of the enquirer the impression of incongruity; the more so, because he must know that the lavish waste of decoration that is thus displayed could never have formed part of the original design. The care that has been employed in designing and carrying out these works of restoration is, however, beyond all praise; and it cannot be too urgently recommended to the attention of the authorities at home.

The churches of Ste. Clothilde, of St. Sulpice, of the Pantheon, are objects of interest, but they do not come within the scope of the present lecture; and so we will pass them by, after noticing the singular *jubé* and the *cul de lampe* of St. Etienne du Mont, and the decidedly Renaissance character of that building, and proceed to notice the church of St. Severin. This is situated in a narrow street near the banks of the Seine, and it comes immediately upon the footpath, the entrance being on the west front, and under the tower which rises at the north-west angle. The style of the church is that of the commencement of the fifteenth century, which in France is characterized by great richness of tracery, but rather a thinness of ornamentation; the precise date of the building is about the year 1439. The plan consists of a nave and choir surrounded by a double aisle, and lateral chapels that occupy the whole space of the ground upon which the church stands; there are eight arches leading up to the apsis that occupies the place of the altar, and has five arches; the arches are struck from two centres, and they are continued up in the clerestory window, without, however, any triforium. The altar piece is a great deal talked about, but it is a poor thing, composed of marble and bronze in the worst possible style of rococo architecture; the chapels and confessionals are also finished in the same style; and though the municipal authorities have taken care of the building, it has been left very much to the taste of the parishioners, who have neglected the works of restoration that are so prodigally lavished elsewhere. The consequence of this is, that the church of St. Severin has more the character of a parish church than the majority of those that we have noticed, and the original design has been less interfered with than has been generally the case. The sharpness and the perfection with which the carving of this church is preserved is very remarkable; and it certainly argues that great attention was paid to the selection of the stone in the commencement.

Beyond the church of St. Severin the observer meets with a peculiar monument that serves in its present mutilated state as the chapel for the Hôtel Dieu, under the name of St. Julien des Pauvres. This building dates from the eleventh century, and it remains almost intact at the present day. It consists of a nave and two side aisles, that are separated by a double range of four columns in front of the altar, which is placed at sufficient distance from the semi-circular apsis to allow of the placing of tribunes behind it; this has necessitated the formation of two more arches, and it may be added that the side aisles are terminated with semi-circular chapels. The height of this chapel is small, but such as it is, it has evidently given way under the thrust of the vaulting of the nave; for the thrust is counteracted by large buttresses built against the abutments on the outside. The columns that support the nave, and the clerestory windows, are good specimens of the eleventh century work; they are carefully profiled, as are all the arch, door, and window mouldings; but there is little attempt at decoration, other than that which would arise from proportion in this building. This church has by some lucky accident escaped the attention of the official restorers; and it therefore constitutes an object of the highest interest to the student of Mediæval antiquity. Dulaure mentions the occurrence of a spring that was famed for the miraculous cures it effected, which rose near the altar of this chapel; it is not at present used in any way.

Notre Dame de Paris next claims the attention of the observer. It would be a work of far too much time, at present, to endeavour to trace the history of this celebrated building, yet the interest of the subject is so great that it is hard to refrain from dwelling on it. The cathedral was built by the care of Maurice de Sully, and the works were commenced about the year 1163; but they "dragged their slow length along," so that it was about three hundred years before they were completed. It was founded upon a bed of gravel, and no piles were introduced; in the beginning, it was raised by thirteen steps out of the ground, but the whole surface of the island has been since elevated, and the access to the building is by steps leading downwards. Its length is about 130 mètres; its width, measured at the window which separates the nave from the choir, is of 48 mètres; its height, from the ground to the highest point of the arches, is 35 mètres nearly; the western front, which is the glory of French Mediæval architecture, is about 40 mètres wide, and 80 mètres high, to the top of the towers. It is impossible to describe the effect of this imposing mass, which consists of three entrances upon the ground floor, surmounted by a gallery filled with statues of the kings and celebrities of France; this again serves as a basement to the rose window of the nave, and the Gothic arches of the side aisles, and the whole of this part of the composition is crowned with a lofty gallery, of the work of the thirteenth century; these serve in their turn as the base of the square towers that terminate the composition, and they are magnificent specimens of the latter end of the thirteenth or the beginning of the fourteenth century. The entrance under the northern tower is remarkable for the representation of the zodiac, that is sculptured around the head of the door, and for the manner in which the statue of the Virgin and Child is introduced in place of the traditional figure of Ceres; the other doorways are adorned with a profusion of statues and sculptured ornaments, which have been sadly mutilated in the course of the various revolutions that Paris has undergone. The same remark may be extended to the statues that filled the niches of the first floor gallery; and it is not surprising, therefore, to find that the architects who have been from time to time charged with the maintenance of this building should have directed their attention to the replacing of the statues. It is to be questioned whether they may not have, in many cases, substituted what is merely modern work for the antiquarian interest that always attaches itself to the original sculpture; and the long rows of statues are, in fact, devoid of all archæological feeling; they are too *new*, too perfect, though they are very beautiful in themselves. This reproach of restoring everything to the original state is, indeed, to be addressed to the whole of the operations that have been carried on of late under the orders of M. Viollet Leduc, in spite of the skill which he has displayed, and in spite of the excellent taste with which the art sculptors have endeavoured to inspire themselves with the spirit of the original design.

However, the beauty of Notre Dame is far from being confined to the west front; it is as remarkable in the elevation of the sides of the transepts, and of the absidal ends, as in any other parts. The great rose windows that fill in the transepts are very remarkable for their original design, and the skill with which they have been restored; and the flying buttresses that are carried from the choir, the nave, and the apsis, are as singularly beautiful. There will be differences of opinion about the taste of the sacristy, the Lady Chapel, the capitular buildings, and the fontaine d'Archévêchè, that have been lately built on the situation of the buildings destroyed in 1831; but there can be none whatever about the extreme grandeur and picturesqueness of effect of the whole mass of the cathedral, when viewed from the north-east, or from the south. It is imposing and grand in the extreme; detail is lost in the general effect; and the observer only begins to dwell upon the exquisite beauty of the parts when he is fatigued with the impression of the whole. The laying bare the cathedral from all surrounding buildings has, it must be confessed, added greatly to this effect, and Englishmen must blush when they compare the conduct of the Parisian municipality with that of their own country, which allows their places of public worship to be disfigured by the mean buildings of commerce. Shortly the buildings of the Hôtel Dieu, and the houses that obstruct the view of Notre Dame from the north-west, will disappear, and the whole building will stand forth in all its glory. It is ungracious, when so much is done for the preservation, and the disengagement of the building, to carp at the measures of detail; but I would suggest that M. Viollet Leduc is "righteous overmuch," in repairing the inevitable traces of time upon the ornaments of the exterior. It may be of interest to notice that M. Leduc has made an essay of Dalemagne's system of silicating the stones that are beginning to exhibit symptoms of decay; and that he has succeeded, apparently, very well in attaining his object. The atmosphere of Paris is, however, so essentially different from that of London, that no inference can be drawn from the success of that operation in the case of the sculpture of Notre Dame, for its application in London.

In the interior of the cathedral, there is given great effect by the immense height of the central opening forming the nave, the transepts, and the choir, and in the regularity with which the triforium and clerestory is carried round. The plan of this church is, as usual, composed of a central nave and choir, and a double aisle on either side, followed by lateral chapels, whose walls act to receive the flying buttresses that bring down the thrust of the central vaulting. The style of the interior is, in the greater part, of the thirteenth century, and it has been recently restored with all M. Viollet Leduc's care and attention to detail. The woodwork of the choir is, however, a modern work, of the time of Louis XIII, which M. Leduc has had the good taste to preserve, in all its contradiction to the original design, but in its expression of the religious feeling of the epoch of its execution, which, at any rate, is the sentiment to be observed in the works of restoration. There are some detached monuments, and some pulpits and confessionals in the nave, which are of doubtful authority, but the carving of the wall of the choir may be particularly noticed. This part of the church was executed by Jean Lavi, mason of Notre Dame, assisted by his nephew, Jean Boutelier, and they were finished, it appears, in 1351; the subjects that are represented are principally taken from the New Testament History, and they are treated with the *naïeveté* and the breadth of handling, that marks the sculpture of the west front. The sculpture, and the iron and bronze work, of the period of Louis XIII, is, however, very much in contradiction with the taste of this sculpture, as was said before; and there is a "geu-gaw" air about the decorations that have survived from the ceremonies of Napoléon's time, and the recent ceremonies of the marriage of Louis Napoléon, which clash singularly with our modern ideas of what ought to be the decorations of a Gothic cathedral. All this is a matter of taste; nevertheless, the principles that have guided M. Leduc in the decorations of this church seem to me liable to very considerable exception. The columns of the nave and choir are, all of them, restored with a cement that attains a considerable degree of hardness, so that they are, in a manner, restored to their original state; the paving is encausticed; the walls are painted in the style that is so common in France now-a-days, which consists in diapers, sky blue, flowers and architectural ornaments; the windows are filled in with stained glass that is marked by the prevailing greenish grey tone, and which communicates a cold, disagreeable hue to everything around. There are some pictures in the various chapels, but they are not of sufficient importance, as far as regards the mass of their colour, to counterbalance the effect of the stained glass; and I confess that, to me at least, the general impression made on my mind by the recent operations of M. Viollet Leduc, is a rather disappointing one. I would distinctly desire it to be understood that I waive the expression of an opinion upon the propriety of many details that have lately been executed for the replacing the original work, for I think that M. Leduc is so eminent an authority in this matter that he may be left to his own sense of responsibility as to when to restore, and when to replace; but I think that the general tone which is given to the restoration of the interior of Notre Dame is very unsatisfactory, and very crude. The worst of this is, that the influence and the authority of M. Leduc has prevailed in the restoration of the other churches; and traces of the same spirit may be perceived in the works that have lately been executed in St. Eustache, St. Germain l'Auxerois, St. Germain des Près, St. Martin des Champs, &c.

It is singular, with this tendency to the introduction of a greenish grey tone in the restoration of the Gothic buildings confided to his care, M. Viollet Leduc should have so completely abandoned the system in the restoration of the Ste. Chapelle, which is one of the most gorgeous works of ancient or modern times. The history of this monument, which is the next in order, and in locality, to Notre Dame, is well known; it was erected as a shrine to enclose the Crown of Thorns that St. Louis had purchased of Baldwin, Emperor of Constantinople, about the year 1239. The chapel was built under the orders of Pierre de Montreuil, between the years 1242 and 1248; it is in two stages, the under one being intended to serve as the chapel to the inhabitants of the Palais de Justice, although it is now sadly desecrated, and the upper one being the shrine for the precious relicts that St. Louis desired to honour. The effect of the lower building seems to have been that of a crypt, in fact, and it was dedicated to the Virgin; the upper chapel is, however, the great object of interest. It is approached through a porch, which is continued by a staircase on one side, that gives access from the bottom level; the plan is very simple, it consists of a large hall, with a polygonal apsis, that is 36 mètres in length, and 9 mètres wide; the height of the two stories, from the soil to the angle of the ridge, is also 36 mètres, so that the height of this building is equal to the length. In the interior, there is not an inch of the surface that is not covered with decorations in encaustic tile, enamelled ware, gold molding, stained glass, &c.; in fact, the prodigality with which the decorative skill of the architect has been lavished upon this monument passes all belief. The tone of the colour that is thus conveyed is, it may be added, warm and harmonious in the extreme; and the effect is markedly increased by the careful manner in which the stained glass is designed in accordance with the style of the thirteenth century. It may afford the English student matter of reflection upon the progressive development of style in the Mediæval times, to observe how this building, which was erected before the Temple Church, in London, bears traces of the future development of the style of the ornamental perpendicular, which did not prevail in England until long after it had flourished here; for the ornaments that are introduced in the windows and doorways, the tracery, &c., that appears in the windows, are of the most advanced character. The French Government have lately devoted great sums to the restoration of this monument, which have been laid out with singular skill by M. Viollet Leduc, who has evidently made this a labour of love. The carpentry of the turret is an exquisite specimen of the style in which the French people now execute works of this kind; and the tribune and tabernacle in the interior of the chapel are equally worthy of admiration, though, it must be confessed, they are designed in a thin and poor style compared with the joiner's work of the same period in England. Altogether, the Ste. Chapelle is an exquisite gem; and its restoration must be considered the great title to fame of that most eminent artist, Viollet Leduc; the works of restoration are nearly finished, and the chapel will soon be dedicated again to divine service.

The church of St. Gervais may be noticed next in this review of the Mediæval antiquities of Paris, although the frontispiece of the building is the work of Jacques Desbrosses, and was finished in the year 1621. The interior of this church is, however, a fine specimen of the style that prevailed in the later periods of the Flamboyant architecture in France, and the changes that came over the spirit of the Mediævalists may very clearly be perceived in the works that were executed under the reign of Charles VI, about the year 1420. The vaulting of the body of the church is bold, and presents many features of interest, as in the introduction of numerous culs de lampes; the stained glass is peculiar, and was executed, partly in 1530, upon the designs by Pinaigrier, and partly in 1587, upon those of Jean Cousin; but the great interest in this building is attached to the triptych in one of the lateral chapels, that is attributed to Albert Durer. The works of St. Gervaise, have also, to a great extent, escaped the restoring mania that has seized the Corporation of Paris, and they exist nearly as time and circumstances had left them.

Not so, however, the works of that most exquisite specimen of the Flamboyant style, the church of St. Méry. This was built about the year 1520, when, by the way, the architecture of the Renaissance was firmly established in France; but the Mediæval style was preferred for this building, except in the case of the south-western tower and the southern part of the interior, which are executed in a kind of bastard Italian style. The façade has suffered very much from the fighting that so fatally distinguished the Revolutionary epoch, but it still retains traces of supreme elegance in the foliage of the doors, and the buttress that divide the composition, which was formerly surmounted with twelve statues of saints or angels in the gable of the choir. In the interior, the usual Parisian style of disposition is adopted, and the choir is accompanied by a double aisle on either side, that leads up to a transept that runs the whole length of the church. There are lateral chapels, on the south side especially, which are dedicated to our Lady and to the Dead; but the architecture of these is quite distinct from that of the body of the church, and is of the worst time of the rococo style of Louis XV. The decorations of the choir are also of the end of the seventeenth century, and are recorded to be the work of the Brothers Slodtz; they, and the exquisite details of the façade, have hitherto escaped from the "restorers" of the town Council; how long they will do so, of course, depends upon the resources of the city of Paris, which seems determined to put a new face upon every building, as was proved by the attempts that they have lately made to restore the church of St. Leu. This is a small church, that lies a little to the north-west of St. Méry, last noticed, and immediately upon the line of the Boulevart Sebastopol. It is a tolerable specimen, in its restored state, of the Renaissance; but it is so "spick and span" new that it entirely loses the interest that grows from associations, and leaves the mind without any of the feelings that we usually attach to a place of worship.

The church of St. Nicholas des Champs is a curious specimen of the late Flamboyant style, passing into the style of the Renaissance; it was begun in the year 1420, but was completely altered in 1575 to what it now is, in the greater part at least. It is rather out of proportion, as the length is considerable compared with its width; it is composed of a nave, or choir, and the double aisles on either side, which are characterized by the arches springing directly from the shafts of the columns without the intervention of any capital on the side of the nave, which is part of the original building. The rest of the interior does not present any interest; it is of much more modern style than the part just noticed, and is a tame specimen of the decorations that were in fashion in the times of Louis XIV; the principal interest in this church is the sculpture of the façade, that is much admired, though, I confess, I cannot see much to commend about it. The church of St. Nicholas des Champs seems to be destined soon to pass under the hands of the municipal authorities, and to be as much transformed as the rest of the buildings that they have employed their talents of restoration upon; for the church is situated at the entrance of the new street that leads to the old Marché du Temple, and, therefore, will be in the most busy part of Paris.

But the most important works that have been of late undertaken for the restoration of a series of buildings, or a conventual structure, in Paris, are, without exception, the ones that are connected with the enlargement of the Conservatoire des Arts et Métiers, which has taken place within the limits of the ancient buildings of the Monastery of St. Martin des Champs. There is something striking in the fate of these buildings, for it must furnish to the reflecting mind food for a comparison between the feelings of those who, in the past, dedicated to the service of God the same structure that their descendants devote to eductional purposes. The Temple, that once sounded with prayers and praise, now sounds with the noisy clang of hydraulic instruments, and the busy motions of agricultural machinery; while the murmurs of the faithful are changed for the anxious enquiries of the student of natural philosophy. Even the library of this Institution might point a moral, as it is housed in the refectory of the ancient convent, and the monks might find their places filled with the diligent enquirers into the history of human progress in arts and sciences. It may be that there is something appropriate in this change of destination; at any rate, it has furnished the motive of the complete restoration of the buildings of the old conventual establishment of St. Martin des Champs.

These works have been directed by M. Vaudoyer, in the mixed spirit of the love of antiquity, and the desire of introducing as far as possible the principles of architecture that are at present in fashion in Paris, that so strangely characterizes the French authorities. In the new buildings, and in much of the old which has forcedly been modified to suit the actual wants of the establishment, the taste of M. Vaudoyer may be at once recognized; and it is marked with the usual amount of care and attention to detail, but with the neglect of general effect, owing to the absence of mass, and the shallow profiling of the mouldings, which characterize that artist's productions, and which seem to have been inspired more by the study of the Renaissance than by the more vigorous Mediæval period. The Library of the Conservatoire is, however, as before said, housed in the singular hall that served as a refectory, and it has been fitted up in strict conformity with the original design, as far as it was possible to do with reference to the new use to be made of it. The hall is divided by a range of pillars, that are models of lightness and elegance, upon which the vaulting of the roof is carried. It is impossible to praise too highly the care and attention with which the works for reinstating the decorations of the walls, the stained glass of the windows, the encaustic paving of the floor, and the presses that surround the walls, are executed. To me there is a disagreeable tone prevalent in the effect of the colouring adopted; but this is a matter of taste, and the diapason once adopted, so to speak, the skill with which all is made to harmonize with it, must be admitted without reserve. But it is in the chapel that M. Vaudoyer has displayed the greatest skill in the adaptation of the ancient buildings to the modern usages. The plan of this building is very simple; it is a choir, terminated with a polygonal apsis, very lofty, and covered with a vaulted roof, which has been restored and the walls decorated, and the windows filled in with stained glass, in strict conformity with the principles of the French school of mediævalists. All around, there are arranged the models of the hydraulic, the agricultural, and the industrial machinery, that are known at the present day; and these models are upon a scale of such a size as to admit of their actual working; thus affording the best lesson that can be read to the intelligent labouring man, for whose instruction they are assembled here. The tone of the colouring of this building is rather warmer than that generally adopted in Paris, and therefore is more pleasing; but the effect of the whole of this magnificent restoration is satisfactory in the extreme, if we can divest our mind of the thought of the profanation of God's house by turning it into an industrial museum. The manner in which M. Vaudoyer has introduced the glazed tiles, in the roofing, may be noticed in passing; it is in character with the architecture of the original buildings, and it harmonizes well with the rest of the work.

I have omitted to notice the tower of St. Jacques la Boucherie that has so signally marked the operations of the municipality in the course of the execution of the works for forming the Rue de Rivoli, because this rostoration seems to me to be too much marked with the love of changing old things for new which prevails in Paris at the present day. It is the remainder of a most beautiful monument of the end of the fourteenth, or the beginning of the fifteenth century, when the Flamboyant style was beginning to make itself felt, and it has been restored in the most perfect manner possible, as far as French taste is concerned. The basement has even been added, and the tower now stands isolated without the buildings with which it was associated, and thus seems to be without a motive for its existence. All that has been attempted in the course of this restoration has, in fact, been marked by a strict archæological spirit as far as the tower itself is concerned; but there is about the whole structure too much of an effort, there is too much of the desire to reproduce a Mediæval monument in all the newness of modern work to satisfy the mind of an artist. It may be that there is somewhat of hypercriticism is thus finding fault with the operations of the city architects in this case; but I think that there are few lovers of antiquity who would not join me in the expression of regret that so much time, money and ingenuity should have been wasted in making the ruined tower of St. Jacques la Boucherie a kind of watch tower upon the line of the new Boulevart. Everything about it is too new, in fact; everything is perfect, and every detail is without defect.

In the remaining parts of Paris, the only work of the Mediæval period that I am acquainted with is the Church of Montmârtre, which is a tolerably well preserved specimen of twelfth century work, and which has hitherto escaped the care of the town architects. It is composed of a nave and two side aisles, which are all terminated in circular apsides, that are appropriated to the service of our Lady, and to two small chapels. The altar is advanced into the body of the church to admit of this use, and also to admit the formation of a tribune behind the altar for the purpose of allowing the nuns of Montmârtre to assist at the sacrifice of the mass. The length of the chapel beyond the high altar has been considerably reduced since this building was erected; but with all this, the height is very disportioned to the width, or length—and the effect of the building is very barn-like; still the evident marks of antiquity that this building retains gives it a peculiar interest in the eyes of an antiquarian and archæologist. As for the other ecclesiastical buildings of Paris, they are I think all of a date subsequent to the times that I have fixed for this notice, and they are all of the period during which the semi-classical school that prevailed in France since the Bourbons ascended the throne. It may be that I have neglected some of the College chapels, and that I may have overlooked some of the ecclesiastical buildings that lie hidden in the dark streets of the Cité; but I trust that you will excuse me on the score that I only meant to call your attention to the most accessible of the monuments of ancient Paris. The churches of the Rue du Faubourg St. Denis, du Roule, de St. Vincent de Paul, de Notre Dame de Lorette, de la Madelaine, de l'Annunciation, de l'Assumption, de St. Louis en l'Isle, de St. Paul, de St. Antoine, des Bernardins, de la Rue d'Enfer, de la Rue des Saints Pères, &c., are all worthy of notice in their particular ways; but they are designedly left out in this present review, which is meant to be of the Mediæval period only, that is so fast disappearing under the levelling influences of the age. It is with the hope of being able to record the state of these buildings before the period of their restoration that I have ventured to call your attention to them.

In looking back upon the principles that have guided the French architects in their recent works for the purpose of restoration, these two things strike me as the most questionable in the course that they have adopted. They attempt too much; and they communicate a general tone of colour to the buildings that is, to my eyes at least, a cold and disagreeable one. It is not the part of the restorer to replace every defective piece of carving, every moulding that may have suffered from the effects of time, or exposure to the weather, or even to the violence of men's hands. All these destructive agencies may communicate an interest that is of the highest character, and their marks may tell a tale that no modern carving can replace, let it be ever so skilful. The worst of this tendency to replace the carvings is, that the new work can never have the spirit of that it supersedes; it must always be a copy, and therefore it is stiff and formal; it lacks the spirit and the freedom of handling that characterized the original. Mr. Gilbert Scott called the attention of the archæological world very forcibly to this defect, and he illustrated it by the works lately executed with such perfection of mechanical skill at Notre Dame. In this case M. Viollet Leduc can be accused of having restored the works of the Cathedral literally to death. Everything about the building will be new, sharp, and perfect; there will be nothing left for the imagination to fill up, no play for the fancy to restore "the lines where beauty lingers." Every detail is to be perfect, from the statues in the niches of the façade to the columns of the nave and choir, that are to be dubbed out to the original size in a zinc cement; every moulding and foliated ornament are to be replaced, until the mind loses all interest in the modern work, if it be ever so perfect a "refaciamento" of the original design. Decidedly the French architects err in restoring over much, but it is an error that we in England ought not to reproach them with, when we reflect upon the state of some of our noblest structures, as, for instance, the Chapter House of Westminster. It may be that this tendency to exaggerate the work of restoration springs from the organization of the *Commission des Monuments Historiques*, and the tendency of the French mind to follow the lead that is set them by those in power. This is certain, that since the organization of that body the works that have been undertaken for the repairs of the ancient buildings in France have been carried on with vigour, but with too much unity of design; and the tendency of all the works of restoration has been decidedly towards the introduction everywhere of the style of the Renaissance, with its shallow mouldings and feeble effects.

The question of taste in colour is proverbially one of difficult solution, but I cannot think that the French artists have solved the difficulties that surround the case. In the Ste. Chapelle, it is true that M. Viollet Leduc has displayed consummate skill in the harmony that he has impressed upon all the decorations; but in Notre Dame he seems to me to have adopted a low tone of colour which is very unsatisfactory to the eye. The works are not finished in this case, so that a judgment upon them is rather premature; the stained glass is, however, in place, and it must enable us to judge of the effect that will be produced when it is completed. Now, it seems to me that there is too great a prevalence of light green and blue and yellow in the patterns, and the body of the stained glass is too often a greenish white, which communicates its colour to the whole mass. It seems to me, also, that the system that the French adopt, of producing their effect by water colours, is likely to produce the cold effect that I allude to; and this is apparent not only in their glass, but also in the painted decorations of their wall surfaces. At any rate, the decorations of St. Eustache, Notre Dame, St. Germain des Près, seem to me open to objection on this score, in variable degrees, of course; the decorative works of St. Martin des Champs, being designed for another purpose than for public worship, are of a different character, and they are more successful. The other churches mentioned are simply restored as far as regards their stone and wood work, they have not yet been tampered with by the decorator's hand. It is to be hoped that if they should be at any future time subject to that fate, the French architects may be led to inquire into the principles of taste in colour, and that they may avoid in their works about to be executed, the garish, cold, and disagreeable effect that they have hitherto impressed upon the monuments that they have restored. The motives of the authorities of the present day are thoroughly good, they seek to honour religion in every manner that they can; it only remains for those whom they employ to examine, in a more catholic spirit, the principles that they introduce in the works of restoration, to place those works beyond criticism. They are so nearly right, that it must be a matter of regret to the man of taste that any exception can be taken to their operations.

I may mention that in the new churches of St. Augustine and the Trinité, and in the church that is being erected on the Boulevart Robert Lenoir, the architects have adopted a style that is a singular mixture of the Lombardic and Renaissance. It is not my intention at present to notice these structures, but I could not refrain from calling your attention to them in this kind of review of Paris ecclesiastical architecture. They display great power and originality, though it can hardly be said that they are designed in any particular style of the classical or Mediæval schools.

Mr. Wm. White, Fellow, was very sorry to say that so many years had elapsed since he had seen any of these works that he could add nothing to what Mr. Burnell had said with reference to them. But he thought they might draw one or two conclusions from the subject brought before them this evening, and especially of encouragement as to the work in our own country in comparing the progress of the art in the two countries; more especially in one branch of restoration which was mentioned,—that of over-restoration, in the excessive desire for primness and finish in the old work to make it equal to that of the new. But though he thought we were in a better position in some respects as to the conservative desire for preserving old surfaces than they were abroad, yet he felt strongly that the same impulses amongst the less informed were as prevalent here as there. There was quite as great a desire everywhere to have that primness and neatness of finish even in old work. A year or two ago, when the west front of Winchester Cathedral was scraped so beautifully, some ladies were overheard to say in passing, "Oh, when will they whitewash the rest like this front? It is so beautifully clean and white." Then he thought from the colouring he had seen in modern French churches generally there was generally a very great deal too much spottiness and diffusion instead of breadth and massiveness in the distribution of their colours. That was especially the case in Notre Dame at Paris; but he did not quite agree with the author of the paper as to the cause of the unsatisfactoriness which he spoke of being attributable to the cold greenish glass introduced to so great an extent, but rather to the colours introduced with it. There was in nearly all the French coloured glass too much desire to imitate a transparency painting upon a cold ground, instead of having the cold ground to break up into multitudinous parts the colours which required that cold ground to bring them out, and also to contribute their effect to the surface colouring of the walls. Again, to his mind they shewed greatly too much desire, in their wall work, to put up large panel or pictorial paintings, for which they required a good light, instead of aiming at a general harmony of colouring throughout the building. He thought, too, it must be very evident, indeed, from what Mr. Burnell had said, that the same influences had been at work in the two countries, as was illustrated in the general retrogression and revival of art throughout the French church, as it had been in the English church. People were fond of saying that abroad they had always kept up their art and so forth, simply because they had kept up a great amount of display and gew-gaw decoration about their altars, in opposition, so to say, to the excessive niggardliness and wretched coldness that there had been exhibited about the altars of our own churches: and he thought this retrogression had been gradual with that of the architecture.* He begged to propose a vote of thanks to Mr. Burnell for his very interesting paper.

Mr. JOHN P. SEDDON (Hon. Sec.) remarked that the colouring at Notre Dame could not be presumed to be a restoration. [Mr. DIGBY WYATT: The colouring is on the diapers and mouldings.] Mr. SEDDON had found that in the few remains of colouring in England the true tints of the old colours were rarely followed, and they were generally so garish in modern imitations and so delicate in the original, that they could not be regarded as restorations.

Mr. DIGBY WYATT, Fellow, desired to draw attention to one or two points of some importance which had, he thought, been overlooked both in the paper and in the remarks which had been made upon it. The first and chief was the great and irremediable injury which such a system of over-restoration, as that which Mr. Burnell had described, inflicted upon the historical student. Glowing with veneration for the past, the antiquary visited one of these scraped and renovated monuments only to find the restoration so good as to render it impossible to be quite sure what was old and was new. Standing before some grand old tomb, upon which the effigy of some old worthy might reasonably be supposed to have rested peaceably for many centuries, how often some trifling anachronism or anomaly in costume or armour served alone to betray that the old gentleman after all was only an impostor,—a child of to-day, instead of a chip of the real old block. Even, if after all, the figure had been left intact, while all around had been renovated, there always remained the distracting doubt that all might not be quite right. It might certainly appear an old figure; but yet some trifling detail might betray that it had been tampered with in such a manner as to leave it doubtful whether it might not be a modern statue, at least in its most essential particulars, instead of an old one. Thus it was that the footprints of time were obliterated, and "men trod out their neighbour's landmarks." Secondly, with regard to the Saint-Chapelle and its restoration, Mr. Wyatt first saw it in the year 1845 while under the hands of M. Lassus. At that time the great vault had been coated over with a deep colouring of blue, and a commencement had been made with the restoration of the stained glass. One reason why this deep blue vault was in such undue preponderance—as also at St. Denis—was that, for the most part, the French artists executed their mediæval polychromatic decorations in oil instead of in fresco, buono-fresco, secco, or distemper. The want of admixture of lime or of whitening in the process adopted was destructive to the transparency or rather luminosity of the colour. They could not get the same appearance of light if the pigments were blended with any other medium as they could if they were mixed with those which had been chiefly used by the mediæval painters. In estimating the value, merits, or demerits of their earlier restorations, members should recollect the difficulty which the French had laboured under of suddenly creating a school not only of efficient architects, sculptors, and painters, but of handicraftsmen as well. They began to restore about the year 1840,—stirred a good deal to the task by antiquaries such as Potier, Langlois, De Caumont, Du Sommerard, the Baron Taylor, &c., and writers of the romantic school of Victor Hugo. The spirit moved them then to break away from the exclusively classical and academic traditions which had bound them from the days of David, and to enter zealously upon the work of the restoration of their magnificent but sadly ill-used historical structures. It was about this time that Merimée, Rio, Lassus, Gerente, Didron, Martin, Viollet Le Duc, the Abbé Texier, Seigneur and others instituted their special studies in this direction; but the Government had interested itself in the preservation, if not the restoration, of national monuments prior to that date. Baron Taylor, in the time of Louis Philippe, made an examination of, and published splendid works upon the principal monuments; but that was inadequately done,—too much in the picturesque style of our own John Britton's "Antiquities." A closer investigation was subsequently carried out under better auspices and with great ability, and a large sum was appropriated to the expences of what was intended to be complete restoration. So far as works of maintenance were concerned there was abundance of ability on the part of the French masons to do what was most essential; but in the early stage the great difficulty was to find decorative artists, and especially painters, who would, or could, lend themselves to the old styles. The fire of Rio's eloquence helped to evoke several, and amongst them one of the earliest and most enthusiastic, who died too young for fame and his country, was, if I remember the name rightly, Felix Orsel. Mottez and Maury Duval painted many of the pictures in St. Germain and L'Auxerrois, most of which are very unsatisfactory. The grave character and deep feeling of Flandrin led to his being extensively employed in ecclesiastical polychromy, which was much better done by him than by any others, as witness his decorations executed in connection with the restorations of St. Germain des Prés, St. Severin, &c. His success, more particularly in the grand original works executed by him in a quasi-Byzantine style at St. Vincent de Paul excited the emulation of classicists who began to paint in the various churches with little knowledge and less feeling. Most of such works were crude—neither tranquil in themselves nor harmonising with their surroundings—in restorations, therefore, simply impertinencies. Each artist blazed away at his rival working in an adjoining chapel, to the entire destruction of repose, through his too vigorous self-assertion. So it was, that in looking over the monuments of Paris, and indeed of France generally, restored during the last thirty years, the observer would frequently find the work of the incompetent artist side by side with that of the more experienced and devotional. No one who was acquainted with the monuments of Paris could fail to agree in the general conclusions drawn by Mr. Burnell that the restorations had been overdone. At the same time, however, they ought to be grateful to the French Government, if it was only for the actual preservation of the existence of these monuments,—since, unless a strong will had been exercised in that behoof, ample money provided, and constant watchfulness over them maintained, they would have either tumbled down of themselves or been swept away in the strong blast of renovation and reconstruction which had swept over, and in some respects devastated the picturesque but dirty old Paris of one's youth. If the French had lost some of their landmarks in detail, they had preserved them in their main features at least, which was more than most of the other countries of Europe had done to an equal extent. In the case of the tower of St. Jacques de la Boucherie, which stood in the way of metropolitan improvements, in most other countries it would not probably have been allowed to stand at all under the circumstances of its awkward position and very dilapidated condition. It still, however, remained, though not in all the picturesque beauty of its old condition. The colouring, in which one traced "the lines where beauty lingers," was lovely before the restoration was commenced; but there it was, and there it would now long remain as a beautiful monument of the century in which it was erected, and of the zeal of the Frenchmen of the nineteenth century for the preservation of their ancient arts. There was, thirdly, one point connected with the French system of care of national structures which was most gratifying. It was, that however much the artists might err in the details of the restorations effected, the Government had not omitted accurately to record the state and condition of the buildings before the restoration was entered upon; and those records were carefully preserved in the archives of the "commission" which thus included every building of note throughout the country. Mr. Wyatt had enjoyed opportunities on more than one occasion of examining some of the portfolios of drawings which had been arranged by the ministry by departments. Every monument of any importance throughout the country has been carefully examined, drawn, measured, and again reduced to scale, whereby any one could hereafter ascertain accurately what the precise condition of any building possessing historical interest was at the time at which this careful survey had been made. Thus, not only were the records of the condition of the buildings preserved, but architects, who were paid to examine, draw, and measure these monuments, acquired in the best way a knowledge of the details of similar structures. It was, indeed, mainly in that way that the French architects charged with the supervision of local antiquities and departmental restorations, had arrived at a fair knowledge of Gothic detail. At the same time, honestly speaking, he (Mr. Wyatt) did not consider the French, as Gothic architects, were to be compared with those of our own country who had specially devoted themselves to the subject of mediæval architecture. A Frenchman was by nature intolerant of tradition; he always desired to manifest himself personally in some way for good or for evil; and would endeavour even to be eccentric, rather than not be esteemed to be original. Struggling constantly to remove himself as far away from tradition as possible, the great object of his life was on all occasions to be able to say, "Ah! c'est moi." It was precisely this principle of self-assertion, rather than of subordination to the precepts inculcated by the wisdom of the past, which had chiefly marred the general characteristics of the magnificent monumental restorations which France had inaugurated with great zeal, at great cost, and with no little ability and erudition.

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* Not that the English neglected the adornment of the east ends of their churches, according to their light, in the seventeenth and eighteenth centuries; but there was the same system prevalent in the church abroad as in our own, of blocking up the east window of the chancel by some hideous erection.—W. W.

Mr **Edward Hall**, F.S.A., Visitor, said he had very little to add after what had fallen from Mr. Wyatt. He was glad to hear it remarked that a Frenchman was somewhat intolerant of tradition; for, this implied that he was the greater artist. Mr. Hall said he might, however, offer one or two observations. With reference to the decorations of the churches, it was necessary to take into account the obligation that the government and municipal authorities have always felt themselves under to provide work for the French artists. Without taking that into consideration, they could scarcely understand the great prevalence of decoration, and what was one result of the necessity of providing work, namely that the undertaking or commissioning of the work had sometimes been in advance of the ability to execute it. That he thought was nearly all that it was important to add to what Mr. Burnell had said. There was, however, one point on which he slightly disagreed with him. He did not himself think the effect from the stained glass was quite so inimical to the effect of the *architecture* as that gentleman considered: but that it diminished the effect of the paintings was obvious. It would be recollected by many present, that at the time of the building of the Houses of Parliament, when it was first proposed to decorate them in fresco, the question was much discussed whether it was desirable to combine the mural decoration of the building with the effects resulting from stained glass. With reference to the decoration of the church of St. Germain des Prés there were some points of interest. For the study of the polychromatic decoration of buildings, the work executed there was important. It seemed to him that the capitals were injured by the gilding and colouring. It might be urged that something of the kind was required in the case of such details; for, prior to the colouring, in the darker recesses of the building the forms could be made out only with a certain amount of difficulty: but, now, the nice undulations of the foliage of the capitals were destroyed by the gilding upon them. The case was one to which he thought some attention might usefully be given by those interested in polychromy. Mr. Burnell had mentioned some of the works of high historic art that there were in the Gothic churches. At St. Séverin, as well as at St. Germain des Prés, there were some magnificent works of this class of art; and they must give to the French, credit for those works of historical art in their decoration (works finer than were to be found anywhere else than in France), while they were inscribing something on the other side of the account in respect of the ordinary decorative painting of their churches. With reference to the restorations of Notre Dame at Paris, he apprehended there were details which an English architect would not approve of—such, for instance, as the ornamentation of the gable of the south transept — which seemed to him very un-Gothic indeed. With regard to the *silicatisation*, for the preservation of the stone, those who visited Amiens Cathedral would be interested in noticing the result of the process there. He believed it had been tested there for a longer period than at Notre Dame in Paris; and the result appeared to him highly successful. The work had been done under M. Viollet-le-Duc; and, when he (Mr. Hall) visited the building, on trying to chip a portion of the stone, in one of the most exposed parts of the tower, he could make no impression upon it. The stone had evidently been much indurated by the process. Moreover, he thought that the atmosphere of Amiens was smoky as compared with that of Paris, and might subject the stone to a more severe test. With regard to the church of St. Leu, on the Boulevard de Sebastopol, in Paris, he would observe that the "restoration," or rather alteration, there, was due to a portion of the eastern part of the church being intersected by the line of the boulevard. It had been, in fact, necessary to shorten the church; and it had always appeared to him that the re-construction had been managed with remarkable skill. He did not know any of the later works which pleased him more; and he thought that the east end of the church, in the disposition of plan, if not in the adaptation of its decorative details, was, under the peculiar circumstances of the case, particularly successful.

Mr. Digby Wyatt begged permission to offer two additional remarks—one was to call attention particularly to the great good judgment displayed by so strong a mediævalist as M. Viollet Le Duc, in recognising, and consenting to the preservation of, the rare beauty which was displayed in the woodwork of the stalls of Notre Dame de Paris, of the time of Louis XIV.. Mr. Wyatt had always looked upon this as some of the most exquisitely carved woodwork in the world. The *cutting*, in the freedom of handling of the chisel, was absolutely lovely. He had obtained castings of some of the panels for the Crystal Palace at Sydenham. Though this woodwork was of a period subject to much reproach in many respects, particularly at the hands of staunch mediævalists, still he doubted whether it would be possible to point out a finer specimen of carved woodwork; and he therefore considered that M. Viollet Le Duc had shown a truly catholic spirit in preserving these stalls, &c., as he had done.* The other remark was that Mr. Burnell, in enumerating the good qualities of the work connected with the Sainte Chapelle, had not done (Mr. Wyatt thought) full justice to the admirable restoration of the lead work under M. Le Duc. He (Mr. Wyatt) did not know of any such specimen of the revival of ancient lead work elsewhere as was to be found there. The grand scale upon which the flèche was conceived, the skilful "bossing" of the lead, the ingenuity displayed in binding it to the wood work, and giving it in every position such skilful overlapping as to allow of expansion and contraction under varying temperatures, at the same time preventing access of wet to the timber framework, were particularly worthy of notice,—more especially since this revival of skilful plumbing was a matter which architects had habitually too much neglected.

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* M. Viollet le Duc, in his "Dictionnaire," (Vol. vi, page 352,) while he finds fault with the structure of these stalls, does justice to their beauty in the following terms:—"Nous avons souvent été appelé à demonter des œuvres de menuiserie des "XVII$^{\text{me}}$ et XVIII$^{\text{me}}$ siècles. On ne comprend pas comment une sculpture, souvent aussi delicate, une ornementation "charmante, s'allie à une structure aussi grossiere et peu raisonnée."

Professor Kerr, Fellow, said he had been pleased to notice the respect with which in the present discussion French architects had been spoken of, contrasting favourably with remarks which on previous occasions had been hazarded respecting their peculiar mode of restoring mediæval buildings; for he thought it was calculated to reflect discredit upon this Institute when members spoke of French architects with disfavour. The fact was, the French idea of restoration and the English idea of restoration were two different things. The French ideas of restoration existed certainly with as much authority, if not apparently with as much reason, as our own; and English architects ought to look at the mode of French restoration not merely dispassionately, but with a view to ascertain by comparison of the two systems whether a lesson might be learnt. Taking the instance of mediæval churches, as the best ground of comparison, it was readily seen what was the difference between the French idea and the English idea. Let the argument for restoration be put thus:—we possess a large number of churches throughout the country which have existed from 500 to 800 years,—which originally were consecrated to purposes of religion,—which have been uninterruptedly used ever since for those purposes (for although we had changed our religion and manners in many details during the interval, we had changed nothing which affected the use of these buildings:) and now as they have fallen into decay it is reasonable that we should restore them. But if the character of the English mind with reference to ancient monuments was such (and he himself approved it highly) that we viewed those churches with a large amount of traditional veneration, it did not follow that we should expect the same views to exist in other countries of the world; and it did not in his opinion become us to throw discredit on the good taste of those countries where it happened not to exist. A catechism, as it were, of the restoration of English churches had been published by this Institute, in the form of a document which was put forth about a year ago: it was very complete: members, individually, might agree with its principles, or might not, but those principles were laid down clearly as the views upon which the leaders of restorative practice professed to work. He did not know that any similar manifesto had been issued by the French architects: but Mr. Digby Wyatt had pointed out at least this important circumstance which seemed highly creditable to the French, namely, that before commencing to restore, they take pains to make a correct record of the condition of the building. English architects restored without recording, and perhaps a good many of the differences of opinion which afterwards occurred with reference to works of restoration might be avoided if we adopted the rule of the French in this particular. At all events, he would submit this formula as likely to be universally accepted in this country,—that he is the best restorer of mediæval churches who best combines the restoration of their utility with the preservation of their identity. Now the French would beyond all doubt go thus far with us heartily: but the two nations seemed immediately to part company when the next question was propounded, namely, which of those elements should assume the preponderance—the utility or the identity? The French appear to say the utility: we say the identity. Mr. Digby Wyatt had hinted at the well-known difference of national character; he would now attempt to put the same idea in another light. The typical Englishman was satisfied with the present; and satisfied with the past as a part of the present: the Frenchman was not satisfied with the present,—he was aspiring after a future,—he turned his back upon the past as a thing overthrown. Here was a radical difference of sentiment between two races upon the question of traditional value which would give rise in a great many respects to differences of practice, and with regard to such a matter as the restoration of mediæval buildings in particular must distinctly show itself. If that were so, how could we expect the

French to abandon their system and adopt ours? We might express regret that what we hold to be the identity of their monuments was being destroyed: but we could not interfere: the best thing we could do was to learn what lesson we could from this difference of national practice; and if we felt the more satisfied with our own works of restoration, or those of them which most closely accord with our governing ideas, this was enough. It was therefore in very questionable taste to denounce the French system, however strongly we might feel that the English system was a better one. It might be argued against ourselves that in some cases identity was preserved at the sacrifice of utility; although those who were the best judges were of opinion that the contrary was most frequently the case, even in this country. On the whole, no doubt there was room for improvement on both sides of the channel, without disparagement on either part.

Mr. THOMAS MORRIS, Associate, remarked on the subject of recording the original condition of buildings restored, that, in the case of St. Stephen's Chapel, Mr. Mackenzie and others had been employed to make an accurate representation of that work, which was carefully engraved, and a copy was in the library of the Institute.

Mr. WHITE would say one word in disagreement with what Professor Kerr had said with reference to the sacrifice of utility to identity in the restoration of ancient churches. He thought it very likely indeed that many did that; but he thought those who did so had very little feeling and perception of those elements of essential church architecture which were generally recognised in our restorations.

Professor KERR said Mr. White had quite misunderstood him. What he said was, he believed occasionally some architects would sacrifice utility to identity; but that he understood from the reports of those who were best informed on the subject that was seldom the case.

Mr. JOHN P. SEDDON, appreciating most fully the kind feelings which had prompted the remarks of Professor Kerr, nevertheless felt bound to say that in his opinion the French restorations were most reprehensible, and this simply because that in them the question of utility was not regarded, but the most useless things were constantly done for the sake of making the work look pretty and new. He thought it was their duty to express their honest opinion on this subject.

Mr. SPENCER BELL expressed his dissent from the views enunciated by Professor Kerr. In his opinion the buildings which had been placed under the hands of the French restorers were valueless as historical monuments. They ought to separate the two questions of veneration for ecclesiastical buildings and veneration for architectural monuments for their antiquity. They were distinct ideas, neither of which seemed to be regarded by the French. The warmth of their artistic energy should rather be expressed in their new buildings; but as trustees for future generations they should endeavour to preserve the original characteristics of their ancient monuments. In two or three centuries hence it would be impossible to distinguish the difference between the ancient and modern structures, and they would be valueless as historical monuments.

Mr. C. F. HAYWARD (Hon. Sec.) said they would be valueless for all other purposes, and what was the value of what had been done in the old town of Carcassonne? In its isolated position, with no chance of its ever being decently inhabited, what was its value as an historical monument? What it would be in a few years' time no one could tell, except a paltry plaything. He visited that town last autumn, and went away with a feeling of extreme disgust with the restoration there. He had the utmost veneration for the genius of M. Le Duc, and for the works he had carried out, but he thought all the money that was being spent on that town was doing no good to the architecture of France, or to the town itself. There was, perhaps, no better example of the useless restorations going on in France than was afforded in the old town of Carcassonne.

Mr. BURGES, Fellow, differed from Mr. Hayward. It was one of those things which would bear restoration, because there was no art to destroy. It had been restored in the most perfect manner, and afforded a good idea of the military architecture of the middle ages, and in that respect he thought M. Le Duc deserved immense credit. It was valuable, inasmuch as it was a page for them to learn from. Admitting M. Le Duc's great genius, he did not give unqualified approval to all his works.

Mr. DIGBY WYATT thought in the case of Carcassonne all purposes would have been answered by a model placed in one of the museums of France.

Mr. C. F. HAYWARD was quite of that opinion, and students would have taken an interest in it. The cathedral itself was one of the most beautiful monuments of France. It had been restored to the utmost extent—the western tower to a degree which almost amounted to a re-building. From the records of that structure they could gather what a beautiful building it was before it was touched.

Professor KERR would be sorry it should be supposed that he had any intention of discouraging the particular ideas which prevailed with regard to restorations in England. All he contended for was that they should allow the French to make a virtue of necessity, and let them to do as they wished with their own.

Mr. E. HALL remarked that in many of the French towns, such as Lisle, the fortifications were being destroyed on account of the inconvenience to the health of the inhabitants.

The CHAIRMAN said all he had to remark with regard to English restorations was, that he had Lincoln Cathedral in his mind, and the fact that, notwithstanding the remonstrances that had been made from time to time, that work was still going on.

A vote of thanks was then unanimously accorded to Mr. Burnell for his paper, and the meeting adjourned.

REMARKS ON THE EVIDENCE OF ARCHITECTS CONCERNING THE OBSTRUCTION OF ANCIENT LIGHTS, AND ON THE PRACTICE OF PROOF BY MEASUREMENT; WITH REFERENCE TO RECENT CASES IN THE COURTS OF EQUITY.

By PROFESSOR KERR, Fellow.

Delivered at the Ordinary General Meeting of the Royal Institute of British Architects, April 30, 1866.

PROFESSOR KERR would commence by laying before the meeting a concise statement of the practical operation of the law on Ancient Lights. It must be admitted, at starting, that perhaps there was nothing which could more truly be called the enemy of the architect, the stern opponent of building improvement, especially in the metropolis. For example, one of those who were listening to him might be engaged in erecting, say in the City of London, some valuable building,—not merely valuable as a work of art—he would not ask the law to trouble itself with that question,—but, in the most simple utilitarian sense, valuable as an improvement of property; he had cleared an extensive and costly site, swept away a mass of inferior, unwholesome, and almost useless buildings, and his purpose now was to create in their stead something which should be worthy of the cost of this demolition, worthy of the advancing intelligence of the age, worthy of the enterprise of England, worthy of all the science that building could command. All unconscious of offence, he proposed to utilize his ground to the utmost; to cover every available part, to elevate his building boldly to meet the demands of spaciousness, healthfulness, cheerfulness, stately aspect, and commercial benefit both to the individual proprietor and to the community at large. Suddenly he would receive an intimation that there existed some little window in some shabby neighbouring tenement, of which he had taken no account, but which, in the eye of the law, possessed a certain control of his proposed great building,—a control, when it came to develop itself, of singularly reckless, uncompromising, selfish strictness. In vain he might plead that he was only building on his own ground, that a considerable distance intervened between his operations and the exacting window, that actually a street intervened, or the property of a third party, or what not; the owner of the window had only to apply to the Court of Chancery, and the great building was absolutely prohibited from raising its head towards the free sky beyond a certain ancient height, or stretching itself on its own bed beyond a certain ancient limit. Drawn, as this picture obviously was, altogether from the architect's point of view, it might be safely affirmed that anything more oppressive than all this, anything more outrageous to the common sense of the uninitiated, it was scarcely possible to conceive.

Nevertheless, such was the law; and knowing, as he did, how strongly some high architectural authorities present might be expected to advocate its alteration, and cordially sympathising, as he himself did, with the feelings which actuated such advocacy, and being fully aware, as he was, that even Lord Chancellors did not hesitate to deplore the effect of the decisions they were pronouncing, and to suggest that the time had possibly come for the legislature to interfere (both Lord Westbury and Lord Cranworth),—yet, as one who had very attentively considered the bearings of the question on purely practical ground, he was sorry to say he had come to the definite conclusion that no material alteration of the law, in respect of principle, would be found possible. To illustrate this, he would suppose, for example, that that meeting, composed of an unusually large number of practical architects, had assembled for the purpose of devising a new law of lighting for a new London. He might suggest, as a not unlikely result, that they would, perhaps almost unanimously, agree to ordain that every proprietor should derive his light from his own ground and the public way, so that no one should have any possible claim of the kind upon his neighbour's ground. Very well; but how would even this help the matter? In a year or two estates of necessity began to be divided; the property which had been duly planned to be wholly lighted from its own ground was sold in two or three lots; the mutual dependence of these portions upon each other in respect of easements could not possibly be ignored or superseded; and there, at one step, had they plunged into all the complications of the law of Ancient Lights as it stood. In fact, it was the legal policy, for want of a better, to accept in theory such an origin as this, or its equivalent, for the foundation of the principle,—to consent to believe, in short, wherever the complications in question were found to exist, that they must have arisen, not by accident or inadvertency, but by consent and bargain, in some such way as this; and thus it was that the lawyers arrived, *à priori*, at the rule in force, viz., that the lighting which obtained access to a window over a neighbour's property was entitled to protection for ever, by the absolute prohibition of any erection on that property which should obstruct the lighting of the window.

Three conditions, however, were to be kept in view:—First, the lighting must have been enjoyed from time out of mind (for which, by an Act of William IV., twenty years was now to be accepted); secondly, the damage must be serious; not imaginary or theoretical, but practical, as a matter of inconvenience, or, in the language of the law, a material or substantial deprivation; and thirdly, the lighting to be protected was not the total or gross amount actually possessed, but the nett amount which had been made use of,—the *necessary* lighting in the particular case.

Now, accepting, as they must, with however bad a grace, the law as it stood, it became plain that although the lawyers must control its application, some one else must supply them with the *facts*. There were two ways in which this could be accomplished; first, by direct evidence; secondly, by indirect evidence, the opinions or calculations of scientific experts. That brought upon the field of debate the architect, or, as he was called in such matters, the surveyor.

Direct evidence, although theoretically the best of all, was practically a thing of the greatest uncertainty here; so much so that he would almost be inclined to pronounce it to be in no possible instance worthy of reliance. It generally took the form of affidavits made by the plaintiff and his servants, to the effect that they plainly perceived by their eyesight the injury in question. And without imputing perjury to worthy persons of the kind, or any more grave error than the natural bias of humanity towards one's own side when one gets into Chancery, he would mention one or two illustrations of direct evidence within his own experience. He had known the occupant of a house so strongly impressed with his sense of injury by reason of his neighbour's intention to rebuild his house of greater height than formerly, that before the new wall had even reached the height of the old, he had caused the gas to be lighted at noon in his rooms and passages, and made oath that it was impossible any longer to transact business by the light of day. In fact this was a common thing; he remembered one occasion on which he was obliged to advise on behalf of a landlord's suit that the tenant's evidence of this kind in a separate suit should be utterly disowned, for the mere sake of the respectability of the case. Again, he had known a working shoemaker, complaining of an open gangway which had been put across the backyard next door, make oath, although it was demonstrable that the abstracted lighting was not more than three per cent., that he was no longer able to see to make his shoes, even close at the window and in bright weather. Affidavits as to the lighting of gas half-an-hour or so earlier than formerly were common; and the solemnity with which eminent lawyers would expatiate upon such frivolous testimony was incredible. If it were possible to suggest anything more absurd than what he had quoted, he might state that that day he had been engaged in a case in which the plaintiff declared on oath that, having been accustomed to breed canaries in a certain dark corner of his room, no sooner had his neighbour some fifty feet off raised a certain wall quite inconsiderably, than the canaries struck for light—promptly refused any longer to replenish the earth. There was only one way in which, as he thought, experiment might be reasonably offered by way of direct evidence of injury to lighting. Let a temporary erection first be put up to correspond with the old state of things, and let a second erection, probably a screen of tarpaulins, be contrived to represent the new, let expert judges of lighting, choosing the precise hour of the day applicable to the case (if such were possible), and the precise atmospheric conditions, probably the early evening of a dull day, station themselves in the room supposed to be injured, and carefully watch; then let the tarpaulins be suddenly lowered and the effect observed. But even this course, however specious in theory, would in his opinion seldom if ever be of any practical avail; for when it was considered how multifarious were the accidental circumstances by which the ultimate judgment might be affected—from the passing change of a cloud to the winking of the observer's eye, —he might safely assert that even in this elaborate form, the direct testimony of the sense would be as unreliable as ever. There was, therefore, left to them but one alternative—to accept the indirect evidence of experts, the professional opinions of architects.

Speaking to an assembly of scientific men, he would next venture without apology to suggest that if scientific opinion were worth anything it ought to be capable of test by proof. Looking at the general tenor of surveyors' evidence in Light cases as shown by scores of affidavits which could be referred to, it was but too plain that it very seldom indeed went farther than the simple dogmatic assertion of an empirical opinion. Mr. A. has been in practice thirty years; and from his experience pronounces the alleged injury to the plaintiff's light to be very material. Mr. B. has been in practice forty years, and pronounces the injury to be absolutely nil. Mr. C., of fifty years' experience, cautiously affirms that a certain amount of damage must be admitted, but that it cannot, in his judgment, be designated as substantial damage. Mr. D., boasting of only twenty years' experience, makes up for the deficiency of age by decision of character, and declares his conviction to be that, instead of being injured, the plaintiff will be largely benefited. Surely, it was not too much to say that such evidence as this was quite unworthy of the profession of architects. What, then, could be devised as a means of proof?

When such evidence as he had alluded to happened occasionally to enter into argument, there was one principle upon which everybody appeared to agree, namely, that the obstruction of sky-surface was an obstruction of light. Reducing this to a definite proposition, it must ultimately take this form—that the light in question being *diffused light*, (not direct sunlight—any more than moonlight—but the dull lighting of a clouded sky, not taken at noon when light was at its best, but at the decline of the day when there would be just enough and none to spare,) the sky might be considered as equivalent to a vast reflector, every point of which yielded its equal share of lighting to the window in question—in other words, that the window was placed in the centre and focus of a half hemisphere of sky-surface as the source of its lighting. He believed that all experiment and reasoning, whether of theoretical or practical men, would invariably confirm this view of the case as one which was to all intents and purposes sound and reliable. What, then, followed? Obviously this suggestion,—why not attempt to measure window light by measuring sky-surface?

The lecturer then proceeded to illustrate, by the help of diagrams, the minutiæ of his published calculations; whereby he considered he had succeeded in mapping out in regular divisions the half hemisphere of sky pertaining to any window, and in attaching to each division its precise comparative lighting value. (He begged leave also to take the opportunity of explaining the reason why he was thus engaged in going over ground which he had previously laid down in a book,—viz., because his most scientific friends had advised him that the book was much less intelligible than he had supposed, and that it was therefore desirable to take an early opportunity of describing the matter personally and familiarly before his brethren at the Institute.) The diagram which resulted (see engraving "Square Projection,") thus represented the half hemisphere of reflecting sky-surface, on what might be called Mercator's projection, equally divided horizontally from the front to each side, and vertically from horizon to zenith; and it seemed plain enough that if any case of lighting were drawn in a sort of perspective upon this diagram, showing the old state of obstruction in contrast with the new, no more was needed to reduce the enquiry to a simple comparison of figures. If the former extent of exposed sky-surface, for instance, stood at the value of one hundred measures, and the proposed future extent at fifty, the diminution threatened was equal to exactly one-half of the old lighting, and this might be taken as proved.

Another form for the diagram would be based on the ordinary circular system of geographical maps (see engraving "Circular Projection"), the horizon being represented as a semicircle and the zenith as its centre, with what might be called parallels of latitude and longitude in the usual way; the figures representing the value of the several sections remaining as in the former diagram.

The way in which to represent upon either of these diagrams the circumstances of a case in hand was simple enough. Taking a block plan of the premises and drawing a semicircle in front of the centre of the window in question, divided to correspond with the diagram, the position laterally of any required point became determined by drawing a line on the plan to that point from the centre of the window and marking where it cut the semicircle. (See engraving.) The position of anything vertically could be ascertained in a similar manner by means of a corresponding sectional drawing (see engraving), on which, in every case, the distance of the object in question from the window being laid down and its height set up from a datum level, a line drawn through the resulting point to the centre of the window would give the vertical projection. The circumstance that horizontal straight lines came to be developed in an elliptical form would create no difficulty after a little practice; and, of course, in the circular projection it would be found that all vertical lines came to radiate towards the zenith,—which also would be easy enough to deal with. (See engraving.)

But it was now to be observed that up to that point they had only arrived at the means of ascertaining the *comparative* abstraction of lighting power; and that would be of no service unless the relation of the size of the window to the size of the room, and of both to the amount of lighting power possessed, could be introduced into the calculation. In a word it became necessary to look about for a standard of requisite lighting:—that which the law desired to protect was only the *necessary* lighting, and they must agree somehow upon a minimum of necessity. Here there was more difficulty in appearance than in reality. For his own part he had taken the following means:—he looked about for a class of rooms which most persons might be expected to accept as being just sufficiently lighted and no more; and he considered he found such a class of rooms in the dining rooms of the ordinary London streets, in Belgravia, Marylebone, and Bloomsbury. It would be matter of opinion of course; but he thought these rooms might be taken as a fair standard,—leaning, if at all, towards the side of the defendant, as ought to be the case. Now, what were the conditions of lighting here? They were matter of mere measurement; and he made them out to take this form,—one foot of width of window to fifty superficial feet of floor, with the opposite houses cutting off the sky at an angle of forty-five degrees all along the front. The window was, of course, supposed to be of the usual height, and the room of usual form; and any exceptional case would be subject to exceptional treatment. Thus a room 20 feet by 20 would have two windows 4 feet wide, with the houses over the way equal in height to the width of the street. Taking, therefore, the figured diagram of the sky, which they had before arrived at (see engraving), and laying down thereon the horizontal line of forty-five degrees just referred to (it would be an elliptical line), the amount of exposed sky-surface left above it would prove to be 68 measures. Therefore, the rule would now take this shape,—one foot of window width to 50 feet of floor at 68 measures of sky-surface would be the minimum of necessary lighting. When the proportion of window width to the floor was larger, the lighting required would be less; when the window was smaller, the lighting required would be more; and the calculation of this would be the application of the standard; but it must be manifest that if this rule could be accepted, it supplied all that was wanted to enable the architect to turn his diagram to account,—he had now ascertained, not merely the proportion of diminution, but the bearing of this upon the legal limit of necessity.

The lecturer then proceeded to make some running remarks upon recent cases, and, first, he would take the case of *Stokes* v. *The City Offices' Company*, decided about a year ago. His friend Professor Donaldson, he knew, felt very strongly upon this case; he having been retained for the defendants; while Messrs. I'Anson, Hesketh, and others, with himself, were on the other side. The evidence was of the usual type, more dogmatic than otherwise, although by no means deficient in argumentativeness; and the result of it all was that a handsome and costly public building was ordered to be cut down deplorably to meet the claims of an ironmonger's shop on the other side of the street. He himself, although helping the result, thought this very hard; but it was the law. He would not however go into this case (especially as no sort of measurement, such as he now advocated, was introduced), but would content himself with quoting a clause from Mr. I'Anson's evidence: "The quantity of light which passes through any given window must depend upon the sky-surface which is visible therefrom, or which gives or reflects light thereto." He quoted this in order to point out that all architects were agreed upon this; which was the one maxim upon which the whole structure of the theory of measurement which he had ventured to submit to the meeting was based.

He would next advert to the celebrated series of cases against the *Auction Mart Company*, just decided by Vice-Chancellor Wood. Their friend Mr. Somers Clarke had been engaged upon a very fine building in the heart of the City, near the corner of Tokenhouse Yard; and he had proceeded to a considerable extent, no doubt to the satisfaction of all who were immediately concerned, when it presently appeared that he was unintentionally jeopardising the ancient lights of two adjoining houses. The lessees of one, Messrs. Pilgrim and Phillips, filed their bill; the lessees of the other, Messrs. Dent, Palmer and Co., filed their bill; the freeholders, the Mercers' Company, filed their bill. The architect unfortunately resisted: the three causes proceeded abreast; affidavits upon affidavits, replies upon rejoinders, rejoinders upon replies, poured in, as the sea might pour into an unhappy vessel from three great leaks at once; and at last, after what might fairly be called a very gallant struggle on the part of an unusually large number of eminent witnesses for the defence, the decree came out the other day more disastrously than even their opponents could have expected, and the building was positively ordered to be pulled down to such an extent as no doubt to make its owners wish it had never been built at all. It was in these cases that he himself had first applied the system of measurement which he had had the honour to explain to the meeting; and the results were perfectly definite, and in his opinion perfectly reliable. (The lecturer drew some diagrams of explanation.) He wished especially to mention one instance by which this application of measurement seemed to be somewhat remarkably tested. A certain ground floor room, called in the documents Mr. Phillips's room, looked out upon an open space; St. Mildred's church was in front, the right hand side was tolerably clear of sky obstruction above a reasonable angle, and the left hand side had the new building standing at right angles to the window. Mr. Somers Clarke obviously thought it was impossible that any detriment could be occasioned to this window by bringing his new wall a few feet further forward towards it, or by making his new wall also a good deal higher; but the occupant thought otherwise,—he was certain, he said, from experience that the encroachment could not be permitted. Surveyors declined to support his view; the lecturer himself, among the rest, declined, upon the mere appearance of the case, to do so, and therefore took other ground of evidence. At last (having in the meantime perfected his theory of measurement) he could not help saying to Mr. Phillips one day that he should be strongly tempted to make a diagram of the lighting of this window, but for the embarrassment which the knowledge of the result might occasion. The lighting in front seemed so ample, and that on one side also, that it appeared impossible to the eye of an architect that any obstruction on the other side, however close and however lofty, could diminish it. But it happened one evening, when he was engaged upon some other diagram in the Mercers' case, that he could no longer resist temptation, and determined to make the experiment and conceal the anticipated result. The figures, however, came out very differently from his expectations, and "direct evidence" for once triumphed over at least dogmatic opinion. The statement of Mr. Phillips had been this, "I never had sufficient light before; and I cannot spare *any* of what I had." The reply of half-a-dozen architects had been this, "You must have had abundant light; and the proposed abstraction can never be felt." The result of measurement was this:—The lighting formerly possessed (the window being by no means wide) was 61 measures, the proposed abstraction was $10\frac{1}{2}$, it was therefore a fact, in spite of appearances, that the original lighting had been less than the minimum of necessity, and that one-sixth of it was to be taken away.

Another case he would mention was that of *Ravenhill* v. *Brown*, made a matter of reference before a very able and intelligent barrister. It was the case of the shoemaker's window and the neighbour's gangway which he had hinted at before. The referee viewed the place, and, looking at the gangway from the outside, shook his head and said it certainly seemed an obstruction to *some* extent and a case for *some* damages. He, however, was asked to look at the thing, not from without, but from within; to put his eye, in fact, to the centre of the window inside; and when he did so, he could scarcely see the gangway at all. The diagram of admeasurement was then produced and explained; and the way in which the obstruction was geometrically driven into a corner, and by positive proof of figures reduced to the inappreciable quantity of 3 per cent., settled the case.

Mason v. *Read* was a peculiar case, in which a Fellow of the Institute had somewhat audaciously proceeded to build an extensive edifice in the city directly in front of one half of a neighbouring window. The diagram was resorted to; the new building loomed very large upon it, and the sky surface became wofully straitened. But he had the pleasure of finding after all that *proof* saved the building. The plaintiff had some time before enlarged his window, so as to embrace almost the entire side of the room; and by reason of this he had of course so much reduced the limit of necessity as regarded sky surface, that the amount proposed to be left unobscured by the new building proved to be enough.

The case of *Arden* v. *Parry* was one which strikingly exemplified the force of the principle which he was disposed to say ought to be held of universal application in disputes about light, namely, that the decision ought to be effected, not by lawyers, but by architects. The subject of dispute was a new theatre in Holborn; the owner of some adjoining houses affirming, and rightly so, that his window light was to be damaged. There was the usual amount of direct evidence, turning upon such points as whether a man could see to cut beef and ham at a certain table, or whether another could see to take money at a certain door, and so on; but when the affidavits came to be read and commented upon before Vice-Chancellor Stuart, his Honour appeared to be impressed with the desirableness of suffering technical pleadings to give way to practical adjustment, and so thought fit to send for one of the plaintiff's professional witnesses (in fact the lecturer himself), and claim his impartial assistance for the promotion of a settlement. Some compromise having been hinted at, by way of reducing the intended height of the new building, the judge put before him in writing three questions,—the counsel for the defence, by the way, protesting earnestly against so unprecedented and dangerous a course. The questions were, first, what would be the real effect of the compromise which had been suggested; secondly, what would be the further effect of a certain further concession; and thirdly, if after even this, the plaintiff's lighting would still be materially damaged, what further concession would relieve him? The result of this, perhaps illegal, but certainly sensible measure was most effectual. Next morning the report was presented to the court, giving definite measurements upon the first and second questions, and a definite proposal upon the third; and in a very short time the surveyors of the parties, proceeding to the ground with the report in their hands, agreed upon a certain modification which settled the dispute. *

If he could now be permitted to direct the attention of the meeting to a few miscellaneous questions of interest, this would be all that time would admit of.

First he would refer to the test line or limit of lighting which it was not unusual to lay down, drawn from the summit of the old obstruction to the sill of the window to be affected; the supposed rule being that the new obstruction need only be confined within the limit thus represented, and no damage could be done. It was a very specious principle, and had certainly seemed to himself for a long time to be indisputable; but in the Auction Mart cases it had been entirely demolished. The proper rule was to apply this line (drawn to the *sill*) only to intended obstructions in front of the old summit, and to test any obstruction in the rear of that summit by a line drawn therefrom to the *head* of the window.

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* As an illustration of the form assumed by a process of adjustment of this kind, it may be useful to append the report *in extenso.*

February 14th, 1866.

ARDEN *v.* PARRY.

Answers to the foregoing Questions.

1.—Taking the modified plan of the defendants, whereby the side wall of the theatre generally is proposed to be lowered 8 feet, the roof being kept of the same form as before, but the said 8 feet lower in level, and whereby secondly the northern half of the length of the said side wall is proposed to be lowered 3 feet more, the roof being there formed with a curb or second slope, I say as follows :—

That in the house No. 9, Warwick Court, the lighting of the ground floor window would be quite uninjured. That the lighting of the first floor window would be diminished about one ninth part thereof; and that as it was formerly in my opinion sufficiently but not at all excessively lighted, I consider this diminution to be what most persons would deem a substantial injury.

That in the house No. 10 the ground floor window was by my estimate very insufficiently lighted before, and that the diminution would be about two-sevenths thereof. That the first floor window I consider to have been formerly just sufficiently lighted, and that I estimate the diminution at one-third.

That the house No. 11, may, I think, be considered to be nearly in the same case as No. 9.

Therefore that Nos. 9 and 11 would in my opinion, be substantially injured in respect of the first floor only, and not then in a great degree; but that No. 10 would be injured in respect of both the ground and the first floors, and very materially.

2.—That as regards the proposed curb roof for the northern part, and its continuation if necessary throughout the southern part also, I do not find the formation of such a curb to be in either case of any real service to the plaintiff's lighting, as it scarcely touches the sky limit.

3.—That the question what would be a reasonable modification of the defendant's plan in this case is a difficult one to answer, unless I were informed as to the peculiar necessities of the defendant's building; but that, looking only at the plaintiff's easements of light, I would venture to submit that if the defendant's side wall could be lowered 10 feet throughout, instead of partly 8 feet and partly 11 feet, keeping the roof of the original shape (except as hereafter provided) only the said 10 feet lower in level, I do not see that the plaintiff would suffer materially in the circumstances. But this is provided the elevated central portion of the said roof (being as I am informed a ventilator), were depressed to the general line; because as at present designed it serves of itself to obstruct a considerable portion of sky-surface as regards all the first floor windows.

NOTE.—That the above results are based upon special diagrams and calculations which I have made, and that they refer to light alone and not to air. (Signed,)

ROBERT KERR.

The rule of the angle of 45 degrees was a thing that deserved mention. It had been the custom of surveyors to say that so long as an obstruction did not encroach beyond an angle of 45 degrees, whether taken vertically or laterally, no harm could be done. They had no sort of reason to assign; but it seemed a sort of half-way point between everything and nothing, just as in the old rule for the width of streets—that they should be in no case narrower than the height of the houses. Measurement, however, not only superseded such a rule of lighting, but proved it to be utterly valueless.

The re-adjustment of old easements of light to suit new circumstances, was a question in which he could not help feeling much interest. He believed that in almost every case the fair play of the English character would be satisfied with such re-adjustment if the law would allow it to be effected. Vice-Chancellor Wood, in deciding the Auction Mart cases, had clearly pointed out that nothing of the kind could be *forced* upon a plaintiff; but although this was clear enough, yet it was equally clear that such a compromise *by consent* might somehow or other almost always be accomplished. In fact, were it not for what might be called the clandestine application of this principle every day, by neighbours between themselves, the law courts would be full of disputes about light.

The glazed tile argument—in other words, the proposal to compensate for diminished light by providing a reflecting surface—had received its *quietus* in the Auction Mart cases. The Court spoke of it in unusually strong language,—that whenever proposed it had been "scouted," that it was "preposterous," and so on; for indeed it was an obvious point of law that no value could be allowed to attach to the provision of such a reflection by one's neighbour, unless the perpetuity of the arrangement could be made matter of right over that neighbour's property, which would be impossible.

The case of *Clarke* v. *Clarke* ought to be alluded to, and in connection with another case, *Yates* v. *Jack*. The latter case was in fact a sort of correction of a supposed error in the former, which had threatened to upset all preconceived notions of law in this matter. The present Lord Chancellor Cranworth in delivering judgment on appeal in Clarke *v.* Clarke had happened to drop a passing remark—quite non-essential in the case—to the effect that people living in populous towns could not expect to preserve the same degree of lighting with people living in the open country. Thereupon, in every light case that arose, "Clarke and Clarke" was sure to be introduced, on the pretence that the law was at length altered and amended by Lord Cranworth; and whatever might be the question at issue, all the ingenuity of counsel on both sides seemed to be reserved for the wearisome discussion of "Clarke and Clarke." Even Vice-Chancellor Wood, (to whom light cases happened to be chiefly taken) hesitated to act any longer on the accustomed ground, until the ghost of "Clarke and Clarke" should be laid to rest. Vice-Chancellor Stuart dealt with the matter more brusquely. He denied that the Lord Chancellor had ever declared anything of the sort, in the sense attributed to his words; it could not possibly be, he said, or the conclusion would be inevitable that the Lord Chancellor proposed to make it law that the less light a man had the less protection he should have for it, which would be absurd. At length another case went up to the Lord Chancellor on appeal, Yates *v.* Jack; and his lordship's judgment was waited for with unusual anxiety, in the hope that the alleged new law of Clarke *v.* Clarke would be either explained or abandoned. Amongst other things the decision of the important cases against the Auction Mart Company was delayed till the upper Court should thus declare itself. The decision came the other day; it simply restored in all its integrity the old law, and no more would now be heard of "Clarke *v* Clarke." This was not a bad illustration of the difficulty of effecting any alteration of the law.

The lecturer, after alluding to the occasional introduction of a jury in light cases, which he considered a very clumsy and unsatisfactory means of investigation, concluded by noting that there were obviously a long list of interesting questions which he was obliged to pass by,—such as how to deal with sky-lights, how to apply the results of measurement to exceptional cases, how and when to introduce considerations of aspect, how to recognize various standards of use and occupation, with many legal and administrative details of much importance to the architect,—to whom he would repeat, (this being in his opinion the best amendment of the law,) all this class of disputes should be referred, and whose investigations only needed the introduction of the principle of scientific proof to become in respect of intelligence and practical fairness, everything that could be desired by the public.

SUPPLEMENT.—EXPLANATION OF THE ENGRAVING.

These diagrams exhibit the mode of applying the system of measurement described in the lecture. No. 1, the *Plan*, is a common block plan of the premises in question, with the lines of lateral "projection" drawn thereon. No. 2, the *Section*, is the diagram by which the vertical projection is effected. No. 3, the *Square Projection*, is the resulting diagram of the case as projected upon one of the two forms; and No. 4, the *Circular Projection*, is the same upon the other form; in both cases the divisions being figured at their standard value, ready for the calculation to be proceeded with to a result.

Take the plan. The attention is first directed to the window; it is 3 feet wide, lighting a room 10 feet by 12. Old buildings as represented have originally surrounded it, of the respective heights marked; for instance, "old 30" signifies that the old building was 30 feet high from the datum level. The intended alterations are indicated by the lines marked "new" with the heights in feet as in the case of the old. A semicircle drawn round the centre of the window is divided into eight equal parts to correspond with the lateral divisions of the ultimate diagram, No. 3 or No. 4, whichever may be preferred. It becomes thus very easy to assign to any point on the plan its position laterally in the "projection," by taking a line from that point to the centre, and noting where it cuts the semicircle. Thus we arrive at all the upright lines of the diagram No. 3 and the corresponding converging lines of No. 4.

The section meanwhile comes into requisition to determine the heights and horizontal lines. The drawing is of the same scale as the plan; the circle as before is drawn round the same centre of the window; and the same divisions are set out to correspond with the vertical divisions of the forms No. 3 and 4. It is thus easy enough to determine the position of any point of plan vertically, by setting up the figured height thereof by scale at the proper distance (measured exactly from the plan), and noting the point this takes with reference to the divisions of the upright circle. (Observe the small crosses on the diagram.) This completes the peculiar perspective represented on the diagrams No. 3 and 4; the old buildings being drawn in full lines, and the new dotted. The circumstance that horizontal lines become curved need be no matter of difficulty; and with the help of the letters which mark the prominent points, the whole process of projection can be readily traced. (A few chimneys, by the bye, are introduced without being shown on the plan.)

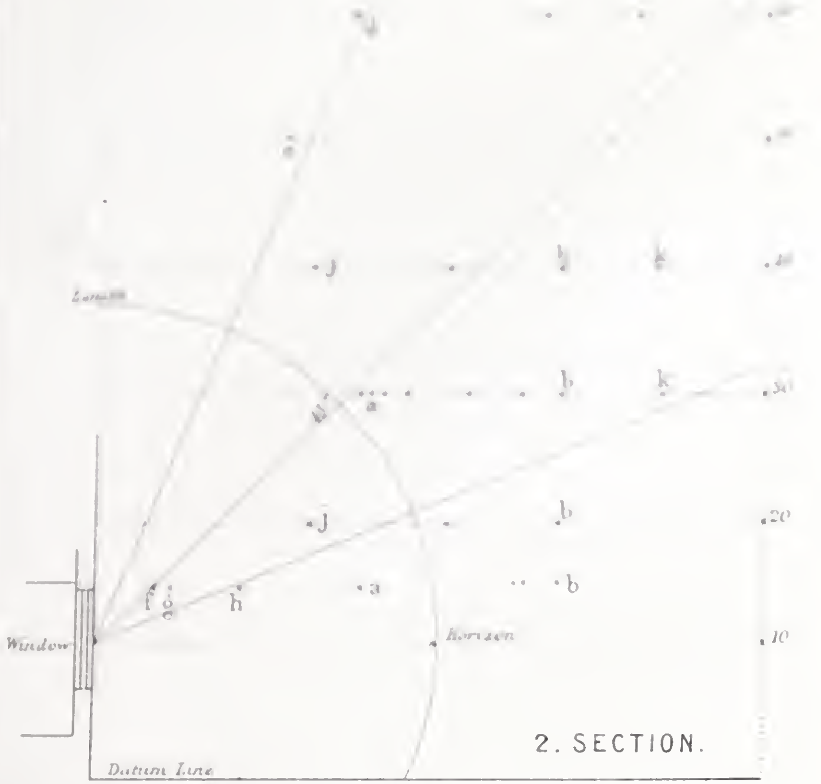
The difference between the two forms of "projection," Nos. 3 and 4, has been described in the lecture; the square model is perhaps most readily applied, while the circular gives a casual observer the best idea of the facts. No. 4 is in fact a sort of perspective drawing of the case on a horizontal picture-plane,—that is, looking up to the zenith; and No. 3 is a perspective drawing of the same on a vertical picture-plane, looking forward all around, but subject to the well-known disadvantages of an excessive range of subject.

Turning now to the final calculations, let it be observed that the intended new buildings are three; namely, A A, old premises on the left of the window, to be increased in height, one portion from 20 to 40 feet, and another from 15 to 30 feet; B, new premises on the right of the window, to be built somewhat nearer than the old and of increased height also; and C, a one story building to cover

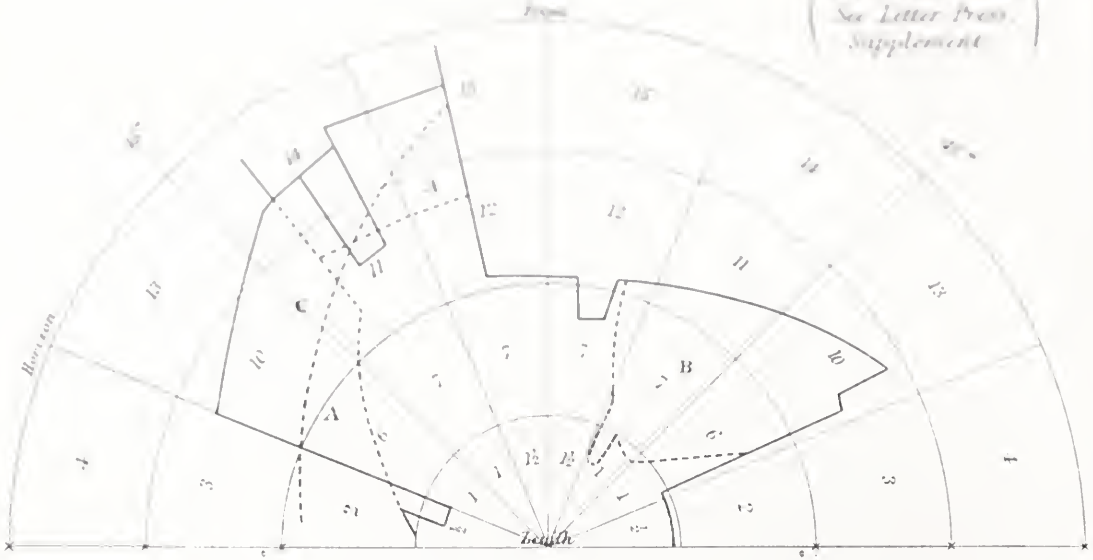
THE MEASUREMENT OF OBSTRUCTIONS OF WINDOW LIGHTING.

BY PROFESSOR KERR, FELLOW

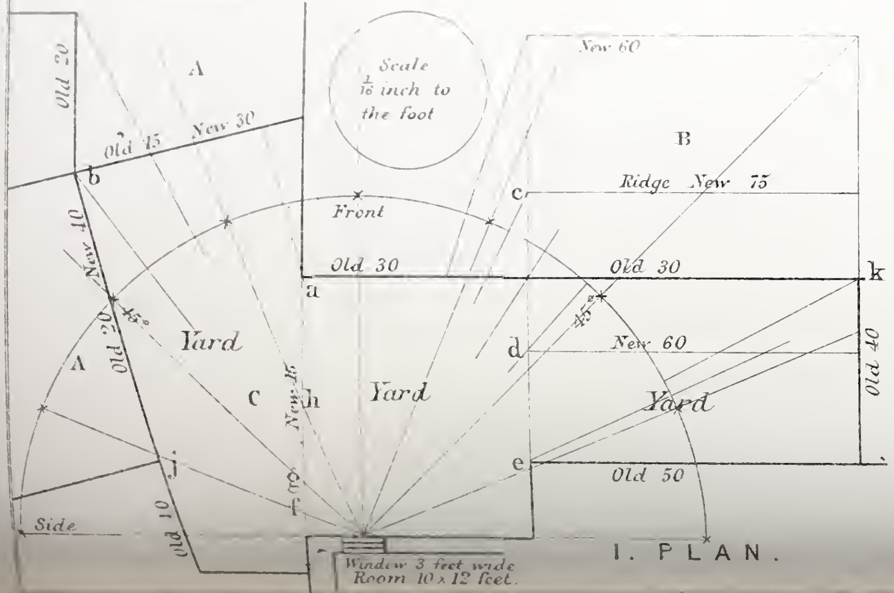
(For Calculations See Letter Press Supplement)



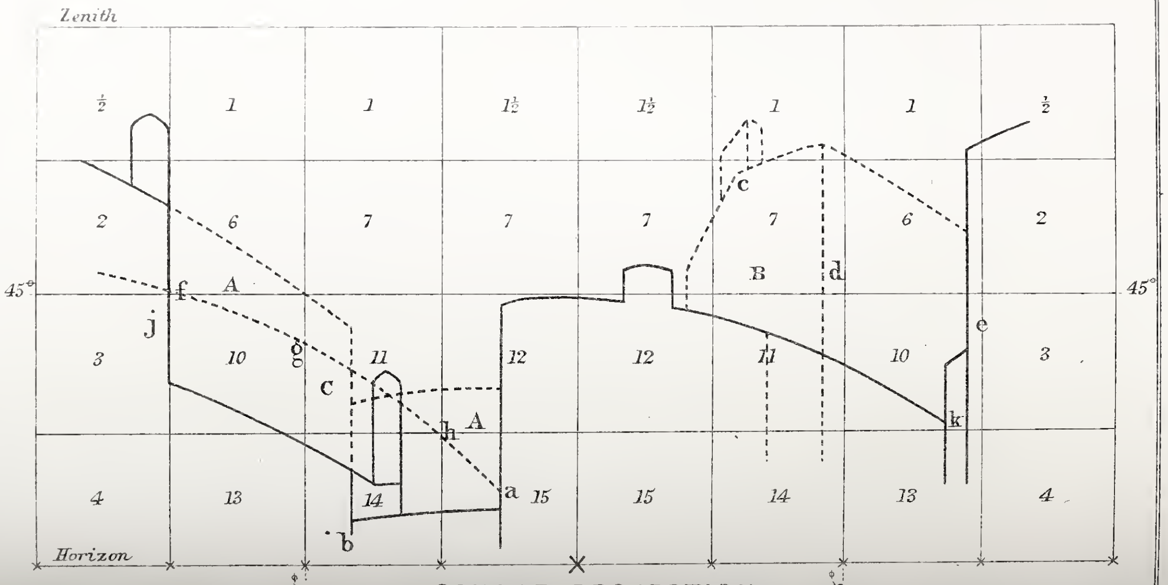
2. SECTION.



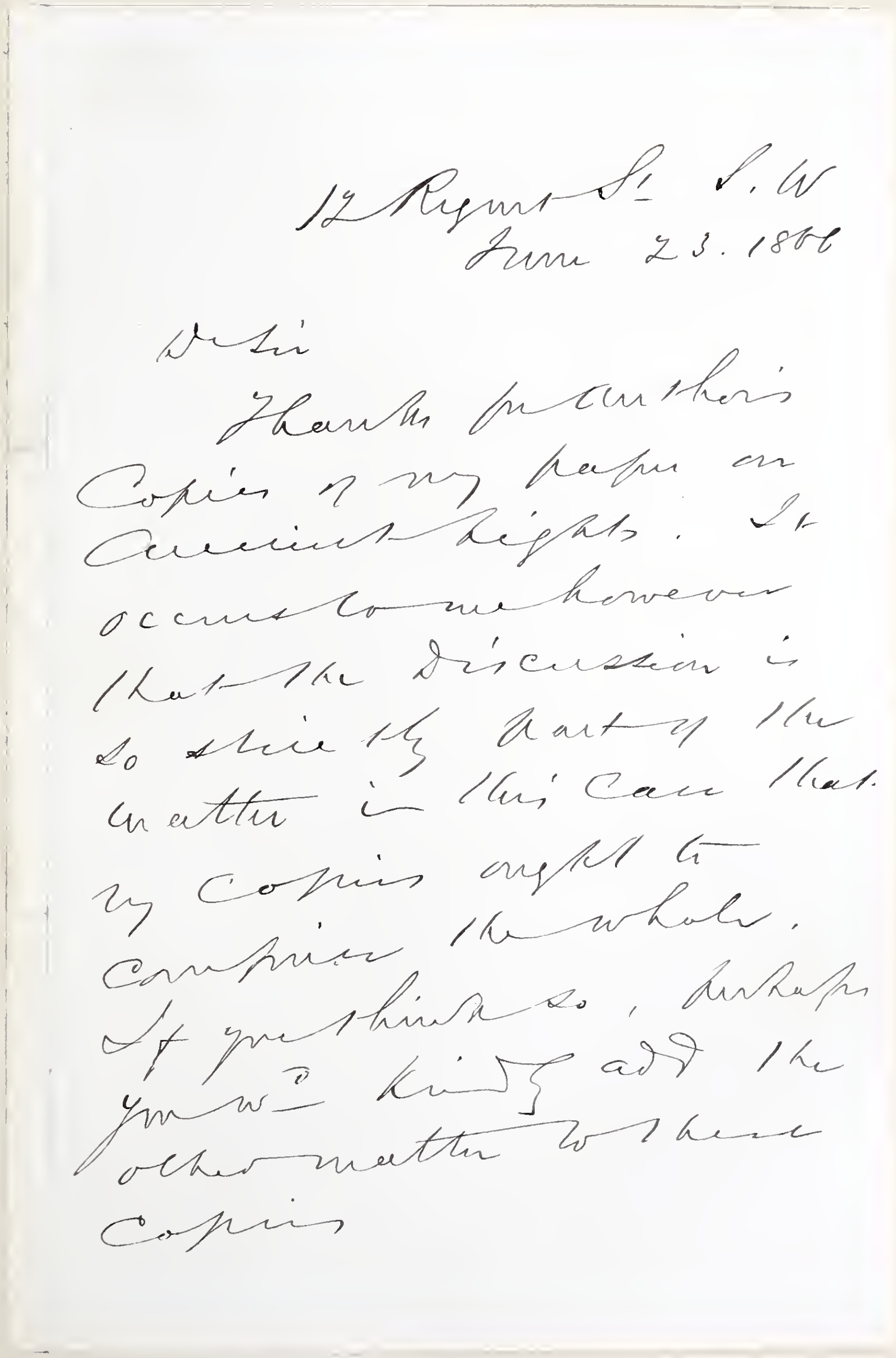
4. CIRCULAR PROJECTION.



1. PLAN.



3. SQUARE PROJECTION.



12 Regent St. S.W
June 23. 1866

Dr Sir

Thanks for author's copies of my paper on Ancient Lights. It occurs to me however that the discussion is so strictly part of the matter in this case that my copies ought to comprise the whole. If you think so, perhaps you w^d kindly add the other matter to these copies

the yard between the window and A, and to be of the height of 15 feet. The calculation then proceeds thus, following the order of the figured divisions throughout, and estimating in each square the part which is unobscured, in proportion to the whole value of the square.

(LIGHTING) OR SKY-SURFACE FORMERLY POSSESSED BY THE WINDOW.

$\frac{1}{4} + 1 + 1 + 1\frac{1}{2} + 1\frac{1}{2} + 1 + 1 + \frac{1}{4} = 7\frac{1}{2}$

$0 + 6 + 7 + 7 + 6 + 7 + 5\frac{1}{2} + 0 = 38\frac{1}{2}$

$0 + 8 + 10 + 5\frac{1}{2} + 1 + 4 + 6 + 0 = 34\frac{1}{2}$

$0 + 0 + 4 + 4 + 0 + 0 + 0 + 0 = 8$

Total $88\frac{1}{2}$ Measures.

ABSTRACTED BY A A.

. . . .

. $2\frac{1}{2}$ . . . . . .

. $8 + 5 + 2$ . . . .

. . . .

Total $17\frac{1}{2}$ Measures, (=20 per cent. of the $88\frac{1}{2}$.)

ABSTRACTED BY B.

. . . . . $\frac{1}{4}$ . .

. . . . $\frac{1}{2} + 7 + 4$.

. . . . $\frac{1}{2} + 4 + 6$.

Total $22\frac{1}{4}$ Measures (=25 per cent. of the $88\frac{1}{2}$.)

(The further abstraction by C may be easily disposed of. We see that the new limit, although, taken by itself, it encroaches considerably upon the former sky-surface, yet, taken in conjunction with the encroachment of A A, does not reach the new limit of the latter, except at one point, and there very inconsiderably.)

Now to ascertain the effect of the above abstractions upon the *necessary lighting* of the easement. The floor space of the room lighted is 10 feet by 12, = 120 feet. By our standard this would require, with 68 measures of lighting, $\frac{120}{50} = 2\frac{2}{5}$ feet of window width. But the actual window width is 3 feet, which would obviously require $68 \times 2\frac{2}{5} \div 3 = 54\frac{1}{2}$ measures of lighting; this therefore becomes the minimum of necessary lighting for the occasion,—so that the $88\frac{1}{2}$ measures formerly possessed is enough and to spare: it was not all *used to the benefit* of the room. The exact amount of superfluity is $88\frac{1}{2} - 54\frac{1}{2} = 34$ measures, which amount the neighbour seems to be at liberty to abstract. The encroachment A A therefore, amounting only to 17, does no legal damage by itself. The encroachment B, being only $22\frac{1}{4}$ measures by itself, does no legal damage. But A A and B together, $17\frac{1}{2} + 22\frac{1}{4} = 39\frac{3}{4}$, would diminish the necessary lighting by $39\frac{3}{4} - 34 = 5\frac{3}{4}$ measures, equal to about 6 per cent. of the original $88\frac{1}{2}$. Would this, then, be a "material" damage? I think not. My rule has been that I would not support any claim based upon less than 10 per cent. R. K.

Professor Donaldson said it was impossible adequately to discuss the paper this evening; he, therefore, proposed that the discussion be deferred. At the same time, they would not defer the vote of thanks to Mr. Kerr, who had treated the subject in such an able manner. Mr. C. C. Nelson having seconded the motion; the President said they were extremely obliged to Professor Kerr for his practical and valuable lecture. The vote of thanks was unanimously carried, and the meeting adjourned.

THE CONVENTUAL ARRANGEMENT OF BATTLE ABBEY,

By Mackenzie E. C. Walcott, B.D., F.R.S.L., F.S.A., Præcentor and Prebendary of Chichester Cathedral.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, May 21st, 1866.

The important Abbey of St. Martin's, Battle, at once one of the greatest historical monuments of this country, and also among the chiefest of the Benedictine monasteries of England, has hitherto never received that attention which it demands. It commemorates the signal victory of William I., and was erected, as All Souls' College, Oxford, was, by Archbishop Chichele as a magnificent chantry, in which masses were offered for the souls of those who had fallen in battle. The monastery is also the first purely Norman foundation which survives to our times. It is a simple act of respect to the Royal Institute of British Architects to preface my observations with the opinions held by previous writers, from whom I regret that I must wholly differ. The Duke of Cleveland gave me unlimited access to the various portions now remaining, and I propose to offer to the Institute the result of patient investigation, continued throughout a fortnight, to their consideration, supplemented by researches among all the documents and MSS. which are now available for the elucidation of the conventual remains.

Gough I. 204 (*Camden's Britannia*, 1789), says that "eight arches of the cloister and infirmary remain. The foundations of the high altar were not long since removed. The rest is stables, supporting a granary, once a dormitory."

The Monasticon (III.) repeats Gough, with a difference, mentioning the latter building twice over as the refectory.

Grose, who certainly visited the place, and Horace Walpole, in his gossiping way (in 1752), call it the church.

Pennant, p. 42 (*Journey from London to the Isle of Wight*), speaks of it as "having in the middle vaulted rooms," and then mentions them over again as "several great vaults below."

Browne Willis was the first author who called it the refectory, and the topographer **Rouse** says the "southernmost vault was the kitchen, and some say the library." In spite of Gough's shrewd guess this building has always since the time of Browne Willis been designated the refectory, and even in the latest archæological publication of last year. It is the key of the position, and on the determination of its true character turns the whole arrangement of the monastic quadrangle. I shall not, therefore, apologize for giving in detail the most recent account of all the remains, reserving my own observations in reply.

"Opposite to the gateway is a range of low parallel walls; the space between these walls was originally a range of chambers occupied by the *monks* as *sleeping apartments*. At right angles to this and fronting the south is the part of the abbey now used as a dwelling house, and the only part of it not in ruins. This consists of the *entrance hall*, a lofty and spacious room. To the left of this hall is a large room having a double vaulted roof, supported by a range of three round centre pillars. Judging from present appearances, and the position of this room with reference to the situation of the Abbey church, these aisles were, it is not unreasonable to suppose, *a part of the cloisters* of this church. On the north side of this range of the Abbey buildings are nine elegant arches, now filled up, but which appear to have been a *continuation of those cloisters*. All that now remains of the church are the walls and piers of a *crypt* at the east end of it, in which were three chapels, the piscina and niches of which are still well preserved. The walls of the *high altar*, which stood on the spot where the ill-fated Harold fell, are still open. Eastward of this part of the Abbey is its noble *refectory*. Under this room is a *crypt*. This room was not their usual dining hall, as is plainly shown by the appropriation of another room to this purpose, now the entrance hall of the present house, but which was then called the dining hall. The refectory was probably their state dining apartment, and used only on festal day. The arched doorway in the side walls of the *crypt* is supposed to have been the means of communication between it and the kitchen. The *refectory* was approached by a flight of steps. The foundations of the *chapter house*, which stood to the south of the church and to the east of the cloisters, are all that are now to be traced of this important part of the Abbey buildings."

I regret to say that my own deductions are opposed to all those statements, which are really merely a tradition of error, owing to want of due precaution in the later copyist, and I proceed to give the grounds upon which I have formed them. The earliest abbots came from Marmoutier and St. Stephen's, Caen; the plans of their abbeys exist in the Monasticon of France, and some of the first English inmates were brought from Canterbury and Westminster. We might well presume that there would be a general similarity between the plans of Battle and their monasteries, and such is the case; the dormitory is a very long building, on the *east side of the cloister*, running north and south, which appears to have been its normal position in all Benedictine houses, although we have a very few exceptions, as at Durham and Worcester. It was an invariable monastic rule to build the refectory on the side parallel with the minster, that is, invariably on the north or south, according to the relative position of the church and cloister. The Benedictine rule was to build the refectory east and west, just as the ordinary Cistercian practice was to set it north and south. We have thus determined three sides of the cloister, the refectory on the south, the minster on the north, and the dormitory on the east. The west side was occupied usually by cellarage with upper apartments as here. We have now cleared the ground for a more particular survey, which I would preface by the documentary history of the monastery, which I regret to say comes no later down than the latter half of the twelfth century.

The Dedication of the Minster to the Holy Trinity, St. Mary, and St. Martin, was made Feb. 11, 1095 (Chron. p. 41), by the Primate, in the presence of the king, six bishops, and many nobles and laymen.

St. Martin's altar is mentioned, 1076, and the building is urged forward (p. 9).

The Cloister was rebuilt before 1171, by Abbot Walter, with marble shafts, and a lavatory designed.

The Nave was partly leaded, 1125-35, by Abbot Warner, restaurationis ecclesiæ indies proficiente statu (p. 62).

Ecclesia, *i.e.* the Nave, was partly leaded by Abbot Ralph before 1125 (p. 58).

The Altar of the Holy Cross and Rood are mentioned 1171 and 1095.

The necessary Offices (ædificia officinarum necessaria) were built after the Church by Abbot Gausbert, C. 1095, and there was nothing remarkable or fine in them, p. 43.

The Chapter House is mentioned, 1102, Abbot Henry being buried in it, p. 47.

Precinct Wall built by Custos Gausfrid and Abbot Ralph, 1100-25 (Chron. p. 49 (Gausfrid), murorum circa ambitum fundationi animum contulit; the abbot built residuum murorum in girum), p. 58.

The Court was enlarged and received additional buildings before 1125, "Curiæ spatium dilatare, novis eandem fabricis augustare (Ib. p. 58). Abbot Odo was buried in the lower part of the nave in 1200 (Leland, Coll. IV. p. 68).

The Parish Church was built before 1125 (Chron. p. 56*)*.—Bp. Anian's indulgence, for completing it is dated 1270 (MS. Brit. Mus.). On June 9, 1330, Edward III. gave his royal licence to crenellate the abbey.

The dimensions of the various buildings are as follows :—

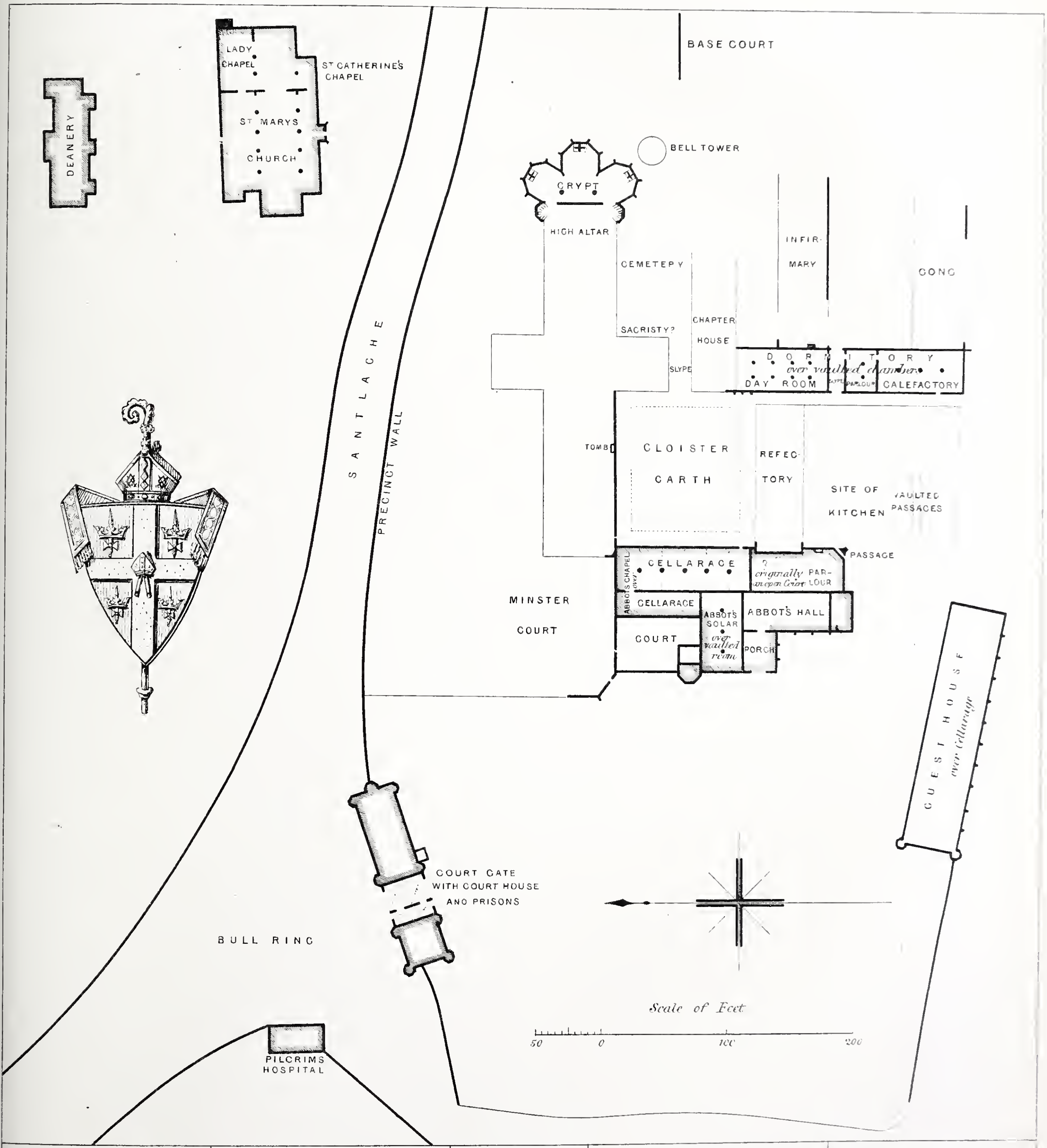
Nave	130·		Gong	100·	21·7
Transept		35	Guest House	195·	40·9
Choir	107·	62· (32· aisle 15·)	Day Room	59·3	35·4
Lady Chapel Crypt	44·	79·5	Slype	6·8	35·
Cloisters, N.S.	122·	E.W. 109·7	Parlour	22·7	35·
Refectory	115 ?	39·5	Calefactory	60·	35·
Dormitory	154·	35·			

I shall now treat the buildings in detail.

The Conventual Remains. Immediately after the dissolution, the church, bell tower, cloister, chapter house, and sacristy, were destroyed, and the superstructure of the cellarage, probably the dormitory of the lay brothers, was rebuilt by Sir Anthony Browne and his son, in 1539. The walls of the precinct with large buttresses, and portions both of Norman and Decorated date, remain upon the north side of the Abbey, reaching from below the parish church to the grand *court gate*, with its noble great archway and postern; the former has bosses representing foliage, and on the south carved heads of Edward III. and Philippa. It forms a tower 35 feet square and 54 feet high, with octagonal turrets, battlemented above a string course, and is 62 feet high. The basement is vaulted; in the south west turret is a staircase to a chamber in the first story, across which and the turrets is a rich arcade, pierced with two cinquefoiled lights. In the upper stage the turrets have cruciform loops, and the main building has a two-light window with tracery in the head, flanked by canopied trefoil-headed niches. At the west end are a Norman window and buttress and some masonry of the same period. A wall formerly communicated with the guest house. Near it are remains of the Pilgrim's Hospital.

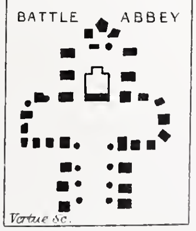
On passing under the gateway we find it forming the north side of a large court; on the east is the *Abbot's Lodge*, and to the south the terrace of the *Guest House*, with large octagonal and battlemented turrets in the western front. It stands over a superb range of early English cellarage, divided by strong walls into eight partitions. It measures 195 feet by 45 feet. At the east end is a large angle fireplace, with the chimney slope above it. On the north side was a passage communicating with the abbot's lodge, 75 feet long. The superstructure, after the dissolution, was converted into apartments which were never internally finished. At the north end was the grand staircase; adjoining it was a noble guard room, 46 feet by 22 feet, succeeded by an ante-room, leading to a gallery, 162 feet long, with windows to the south. At the east end of this gallery was a drawing room, thirty-one feet by twenty-nine, having three windows to the south; and on the north side were several rooms having windows to the court.

The Abbot's Lodge contains his hall, 57 feet by 31 feet, and 57 feet high, battlemented and having large buttresses; it is lighted by three large west windows, and one on the south, rebuilt with the oak ceiling in 1812. It contains a dais and music gallery. It is approached by a porch vaulted in two spans, with a western door of Perpendicular character having corbel heads to the hood mould. The whole of the front has been reconstructed since Grimm made his drawings in 1783, and crow-stepped gables have been added to the hall. Northward of this porch is the substructure of the abbot's solar, 50 feet by 22 feet, vaulted, and divided into two alleys by three pillars of Decorated date, the arms of Edward III. appearing on the brackets. Above it was his solar, marked by a crow-stepped gable, and reached by a stair turret, still remaining. The substructure is now the drawing room, and has been richly coloured and gilded in good taste by the Duke of Cleveland. On the north-west angle is an octagonal turret with stairs. A battlemented wall runs northward from it to the jambs of a great gateway, which opened into the Minster court; and another wall, connected with the Abbot's chapel and in a direct line with the south wall of the church, still retains a large pointed archway on the south side. Walls originally ran northward from this point to the east side of the court gateway. The



N.E. VIEW 12TH CENTURY. SEAL B. MUS.

Battle Abbey.



BY THE REVD MACKENZIE E.C. WALCOTT B.D

SEAL BRIT MUS

Stanford's Geographical Establishment, London.

eastern gable of the chapel, with a circle over three lancets, which stood over the north end of the cellarage, is represented in one of Grimm's drawings: the staircase, near a pillar with beautiful foliage, remains; and at the south end of the cellarage are stone stairs which led to the upper storey: beyond them is a doorway with a shouldered arch and chamfered jambs.

The great Cloister Garth forms a square of 120 feet by 109 feet. On the west side is an arcade, upon a wall which formed the western side of the west alley of the cloisters, which was vaulted, the Early English springers and shafts still remaining. The arcade of nine bays has in the two southernmost panels beautiful groups of foliage in the tympanum of the arches, of transitional Early English date, the capital of opening roses is of peculiar beauty, crowning the shaft which divides the sub-arches in one of the bays; the rest are of the Perpendicular period, with blind tracery of four lights in each bay, there is a door to the cellarage at the north end, and near it what may have been a turn for giving an extra cup of wine to a weary monk.

The richly arcaded basement of the west wall of the Refectory, two niches for plate or lights, one trefoil headed, the other imperfect, with the side of a window above them in a fragment of the south wall remain. The Decorated arcade is cinquefoiled, with trefoiled spandrils and a rich cornice. Its width was about 40 feet. In 1783, the basement of the north and south walls was standing. At the termination of the west wing of the cloister is a wall containing a newel staircase, and in front of the Abbot's parlour, now the dining room, is a projecting wall, with a passage hitherto designated the Abbot's oratory. On the west side are remains of a window. The string course has carved corble heads. The Kitchen, which was vaulted and polygonal, stood southward of the Hall. Stairs still communicate with large vaulted passages running parallel with the Refectory. In the south-east angle of the cloister may be seen the bases of Early English shafts, which formed one side of a doorway; and northward of it are the bases of two other shafts on the east wall of the cloister which was vaulted over. Adjoining this portion of the ruin, and between the transept of the Minster (or possibly, as was the ordinary arrangement, the *slype* or passage to the cemetery of the monks on the south side of the choir), and the Dormitory, stood the Chapter-house, the foundations of which were discovered in 1817 northward of the avenue of elm trees.

The Dormitory, 154 feet by 35 feet, Early English, presents a range of eight windows on the west, with a smaller one at the south end, and on the north a window and niche. There are ten windows on the east, with a doorway to stairs descending through a buttress; and another at the south-east angle, which communicated with the Gong, which ran eastward at right angles to the dormitory; some parts of its southern wall with two large arches remains. Each window of the dormitory has nook shafts, and was transomed in order to afford a smaller light for the accommodation of the cells of the monks, who occupied them at night and during the meridian, the midday sleep of one hour; each was divided from the central passage by a low parclose, and contained a bed and seat. In the south elevation are three lancets above, and two below them; the gable contains a single light. In 1811 the tiles of the floor were discovered. The roof was of Sussex oak, and shingled; part of it remained at that date. The walls were painted below, and in imitation of masonry above, in red colour. Below the dormitory are three chambers, with Purbeck shafts and vaulted. The northernmost, the Day-room, 55 feet by 35 feet, is in three alleys, divided by eight pillars, vaulted, and lighted by broad windows, and entered by a door in the south wall of a slype. It formed the ordinary sitting room of the monks when not in cloister, hall, or dormitory. The Regular Parlour on the south side of this slype is vaulted, and lighted by two lancets in the east and west, and forms two alleys divided longitudinally by two pillars. In it conversation was allowed at certain times. To the south is the Calefactory of four bays with three pillars, 58 feet by 35 feet, and 23 feet high; it retains traces of colour on the plaster of the vault, a large fireplace from which it derived its name, two deeply splayed windows on the south, a good south-west two-light window with a quatrefoil in the head; and in the west wall a lancet, and doorway with steps ascending outward. This room would be used by the monks to warm themselves, to light censers and dry parchment, and, perhaps, by the writers. In the south-east angle is a staircase to the gong. The south-east part of the exterior walls shows two large round headed arches, and the outer doorways of the two staircases to the upper and lower gongs or garderobes. In a map, dated 1722, there were eight arches remaining at the south-east end of the latter buildings. The stairs in the dormitory wall probably were used by the minuti, or monks, who had been bled, and returned from the infirmary at night. The walls of the infirmary may still be traced eastward of the dormitory, as it stood at Winchester, Westminster, Canterbury, Peterborough, Crowland, Ely, and other places.

The Abbey Church of St. Martin. The Abbey Seals represent the western front, with a large gable containing round windows and a niche; above a magnificent arch, like that of Tewkesbury, or more probably as at Marmantier, it was a rough representation of three large portals, such as may be seen at Lincoln or Peterborough. The central tower, which is crowned with a low spire, is of two storeys, with round windows under circles, and windows in the upper stage. The transept has a clerestory, and is terminated on each front like the choir by an arcaded tower higher than those of St. Stephen's, Caen, or Peterborough, and crowned with a low spirelet. The arrangement of the apse with three radiating chapels resembled that of Bury St. Edmund's, Norwich Cathedral, and the original plan of Gloucester, Pershore, and Worcester. On the seal of Abbot Odo, which appears to give a lateral view of the church, there are three eastern chapels, which tally with the existing eastern front. Vertue, in 1734, gave a ground plan in Rapin's History, which represents a cruciform church with a triapsidal eastern end. Gough mentions two western towers, but evidently in error; on the north side in the plantation there are foundations covered with trees, and doubtless there was also a north porch for the entrance of lay visitors and women into the nave. The fragment of the south west angle which remains, 6 feet thick and projecting nearly 4 feet, exhibits nook shafts; the interior of the Perpendicular south doorway of the nave, opening into the west alley of the cloister, is concealed by a modern building, but the lower part of the jambs are perfect, as well as the bases of the shafts on the outer or southern side. The basement of the south wall of the nave remains. Above, in the south west angle may be seen the side and half the arch of a round headed window which lighted the nave; possibly, from its height, the aisle roof, as at Rochester, was raised to the level of the nave triforum. Midway in its length is a stone grave, possibly the tomb of Abbot Odo, who died in 1200, and was buried, as Leland says, in the lower part of the nave, which measured about 130 feet in length, and was probably 60 feet in width. The transept and choir have wholly disappeared, the former was about 35 feet wide. In the north wing was the Altar of the Holy Apostles. The rood loft, surmounted by a large crucifix, with the Altar of the Holy Cross, stood at the entrance of the crossing. In 1445 Sir Thomas Hoo founded a chantry at "St. Benignus' altar." From the platform of the processional path, which terminated in a square end behind the high altar, standing on the spot where Harold's standard fell, stairs leading out of the aisles of the presbytery and once enclosed with circular buttresses (possibly forming turrets above, to flank the east gables of the aisle), communicate with a crypt, which consists of a transverse alley opening into three pentagonal apses of Early Decorated date, each of which has its altar. The eastern one in part remains, and was situated under the upper Lady Chapel; in the north chapel the caps of the vaulting shafts and a drain; and in the south chapel a trefoil headed niche with a drain are still to be seen. The vaulting is gone. The crypt is 44 feet 6 inches in length by 79 feet in breadth, and the diameter of each chapel is 21 feet. Crypts were discontinued after the Norman period, but there is an Early English example at Hereford Cathedral under the Lady Chapel; another of the Decorated period under the choir of Wimborne Minster, and a third of Perpendicular date under the western Lady Chapel of Glastonbury Abbey. This crypt was not an addition, but a reconstruction of an earlier apsidal termination, in the last part of the thirteenth century. The eastern arm, from the crossing to the end of the processional path, measured 107 feet, and including the eastern chapel of the crypt was 142 feet in length. The central alley was 37 feet broad internally, and each aisle about 14 feet. A curious tradition, preserved in the Eulogium Historiarum, gives us the actual dimensions of the church. According to the legend William I., after three days of fast and prayer, desired of God to know the duration of his dynasty in England, and was directed to lay out the plot of a church of as many feet as they should reign years. The next morning with stakes he marked out ground to a length of 500 feet, these boundaries three times were removed and fixed to 315 feet, which were recognised by him as the exact dimensions of the Minster which he built. It therefore exceeded the length of Rochester, Bath, Sherborne, Christchurch, Hants, Southwell, Ripon, Manchester, and Romsey. Outside the south-east angle of the south chapel is a large circle or polygon, 50 feet in diameter, marking the site of the bell tower which stood in a position almost corresponding to those at Worcester and Croyland. The crypt was first laid open in 1817. Eastward of these remains, among the cedar trees, may be traced the walls of some buildings of the Base court. The water was supplied from Feldresland and Loose Farm.

The Precinct wall is partly the original Norman enclosure, and in part of the date 1330; it retains considerable portions of the alura, and extends from the Court Gate along the road known from an early date as Santlache. The Church of St. Mary contains some brasses, stained glass, and a rood-stair and bridge. The Nave, with its round and octagonal pillars, is Norman; the Clerestory and chancel, which is arcaded like Rochester, Brecon, and Merton, are Early English. The north aisle is Perpendicular, with the Lady Chapel at the east end. The Chapel of St. Katharine and the south aisle windows are Decorated; the former retains some canopied niches. The font is Transitional Norman; the tower Perpendicular, with the original Early English western doorway.*

In reply to inquiries by Mr. STREET and Mr. W. PAPWORTH, Mr. WALCOTT explained that his ground plan was only in part conjectural, portions of the church still standing, and others being indicated on the turf in hot weather, and by irregularities of the ground. Comparison with plans of the period facilitated such investigations. No excavations, unfortunately, are possible without the destruction of ornamental gardens and plantations, which would hardly be tolerated. The crypt he considered to be Early Decorated, of the close of the thirteenth century, and rather a reconstruction of earlier work than a positive addition to the east end, for the purpose of interment of abbots and persons of distinction. The earlier arrangement of the eastern end of the Minster, at latest in the twelfth century, is shown upon the conventual seal of that date in the British Museum, apparently a rude representation of three Chapels. There are many instances of three eastern chapels, as at Bury St. Edmunds, Pershore, Gloucester, Tewkesbury, and Norwich originally; here exceptionally they form a conjunctive group. The Pentagonal form of the apses shows that they are not of Norman date.

At the request of Professor KERR, Mr. WALCOTT explained the ground plans of Ely and Peterborough, which he exhibited. But as these form part of Mr. Walcott's Cathedral Cities of England and Wales, now in course of publication, it would be superfluous to print them in this place.

A vote of thanks was carried by acclamation, and the meeting adjourned.

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* A succinct history of the Abbey, drawn up from my own investigations and original documents, will shortly be published by Mr. Ticehurst, of Battle, with illustrations.

ADDITIONAL ILLUSTRATIONS OF THE CONVENTUAL ARRANGEMENTS OF BENEDICTINE ABBEYS.

By Mackenzie E. C. Walcott, B.D., F.R.S.L., F.S.A., &c.

Appendix to Paper read at the Ordinary General Meeting of the Royal Institute of British Architects, May 21st, 1866.

The archæologist, in endeavouring to allot the various buildings of a monastery, in the case of Cistercian houses, has the Nomasticon to guide him, but for those of Benedictines he has had hitherto no more light than is afforded by Davies' 'Rites of Durham,' written in the sixteenth century, or the notes of Dr. Hopkins for Worcester; but I had the pleasure of shewing before the Royal Institute of British Architects some time since that Lanfranc's 'Constitutions,' by a special exception, perfectly illustrated the existing buildings of Canterbury, and I am now able to redeem the hope, which I then suggested, of one day using the 'Custumal of Westminster,' written after 1260, for a similar purpose. From it I shall select those portions which give positive information on the conventual arrangement, merely premising that it is a confused Mediæval MS., full of repetition and ill-arranged, but still enlightening us on a subject very intricate and in many particulars involved in obscurity. In fact throughout it we have contrasts between "ancient usage" and "modern use," and in one place the author doubts whether "the Long Chamber" adjoined the Refectory or was the Prior's Chamber; it is no wonder, therefore, if the archæologist now experiences difficulties which are too often insuperable, except by means of comparison with other known buildings of a religious order. The style of Latin employed may be judged from the derivation of Capitulum as *capud licium*, "the conclusion of strifes."

First in order I take the *Cloisters*. The south alley was usually left free and unoccupied, it being passable only at certain times; in the west alley, in cloister time, the Master of Novices, junior monks under his charge, and novices sat; in the north alley, the Prior near the east church door, and the monks according to seniority, juniors being nearest to him and sitting sideways, with the face of one turned to the back of the other. At the upper end of the east alley sat the Abbot. The bench-tables were covered with matting, and the floor was strewn with hay or rushes, according to the season. At night, before Matins and until their close, five cressets in lanterns were lighted by the Sub-chamberlain, one at the dormitory door and the rest at the four corners. Three other cressets, in hanging lanterns, after dark were lighted, one in the north alley in the middle towards the church door, a second in the west alley near the aumbry of the Master of the Novices, and a third in the south alley next the Refectory. They were extinguished by the Sub-chamberlain when the "Rounds" had passed after Compline. The Prior, Sub-prior and Master of Novices preserved order. The Keeper of the Cloister Aumbry for the books had his own seat. At the *Lavatory* there were five towels, two used by the Cloister Prior and High Mass Priest, and three on perches for the use of the Convent and guests, all being changed on Sundays by the Chamberlain's servant. After meridian the monks washed their hands and combed their heads, and between supper and Beveres. Cloister time was after Prime; and after Tierce conversation was allowed, but those in conversation remained sitting, and spoke in French; Latin was used to a Prior or Master of the Novices; English was forbidden. In the Carols (which were proscribed to the Cellarer, Infirmarer and Chamberlain) illumination, writing, and noting music, for the good of the church, were allowed. As lay people much frequented the cloisters, signs of punishment were not to be visible when they were passing. In the cloister shaving took place once a fortnight, and feet-washing every Saturday. The monks shaved in gangs of three; during these operations all the doors into the cloister were rigorously closed by the servant of the inner hostry, the servant of the outer parlour, the doorkeeper of the cellarage, and the church servant. The inner hostry and outer parlour were on the west side, as the cellarage was also, opposite to the chapter house door. There were also a cella monachorum hospitum, a monks' spital, and a small chapter house for the use of obedientiaries.

The Outer and Inner Parlours. The outer parlour was only opened after Chapter, or for the reception of guests, persons desiring admission to the noviciate, or monks returning from a journey. In the outer parlour a fugitive monk, who returned, bared himself for discipline in chapter. It was under the charge of the Almoner and Sub-almoner. It was opened for the entertainment of a matron or monk's mother, after hall time and before supper. It was strewn with hay or rushes and furnished with mats. The inner or regular parlour was similarly supplied; in it was a long large mat, on which monks who had been bled sat; and here conversation, under certain restrictions, was permitted. There were also cells for the refractory, and a prison with low diet for the contumacious.

The Refectory. At the upper end was the high table, elevated on a step; at the north end sat the Abbot, with a skylla or bell on his right hand; at the south end the Prior sat. A Bishop, if present, sat in the middle under the "Majesty." Before the president was laid a great cup, knives and spoons, napkins for bread and cheese, silver salts, cups, bason, towel and ewer, and a wooden dish for the alms or fragments. At the lower end of the hall was the table of the Minuti, Monks who had been bled; each table was raised on a step, and the benches were matted; there was space sufficient to pass between the inner benches and the walls. Each monk had his own knife, and a smaller cnipulus, salts were laid out, and cups and spoons; two servitors attended at high table, and one on either side of the hall; with the reader they had "mixtum," a slight meal before the cymbalum sounded for dinner. Four guests were invited daily by the president, and five by the convent. No guests in boots or spurs were admissible. The president sat with them after hall; or, under particular circumstances, to hostry, the Long Chamber, or St. Dunstan's Chapel, (possibly that known as the chapel of the Pyx), for wine and dessert. But if a simple monk was president the additional fare was taken in silence behind the Refectory door. Mothers of monks were entertained in hall. The Refectory had a large aumbry for cups. Between the Refectory and the kitchen, at the south or south-west end, was a vaulted passage, and in the kitchen window a towel was hung. The dinner hour varied, being at 12 or 3 p.m. Two lamps burned at supper time. On festivals of St. Edward C. the nave was filled with 34 lamps, 13 tapers and 100 candles, and then 18 or 22 tapers were lighted, three on each of the four principal tables, and two on the rest. The hall was closed after Compline.

The Misericord adjoined the Refectory and kitchen; in it the monks dined on flesh days. It had its allowance of candles and tapers, and was strewn like the Refectory.

The Dormitory. On the third step, at the top of the stairs was a crucifix in the window. Each monk had a straw bed, with coverlet and under covering, with a bench for dressing at the foot, a round mat at the side, a perch an ell long over his head for his clothes, and an asser or partition, a palm high, to secure seclusion from his fellows. All slept in night clothes and caps. Snorers and talkers in their sleep were placed by themselves. No coverlet was to be scarlet, green, or of bright colours. The central alley was covered with soft mats, and the floor strewn on ten principal feasts with rushes or mats. There were several bells, one in the parlour, a skylla in the Dormitory, another in the Refectory, and a cymbalum rung at Hall time in the cloister. At night the Prior with a lantern visited the

Dormitory, and the Gong or Latrine (domus necessaria) with its sedilia, which were furnished with hay. The monks went altogether into the Gong in the morning, and last thing at night. In the middle of the night the third and fourth Priors made the rounds.

The Infirmary contained chambers. In the Chapel of St. Katherine certain punishments were inflicted. A lamp burned at the entrance of the cloister to the Infirmary. The monks walked along the bank of the Thames, and some of the obedientiaries were allowed to go into the Palace or London. Upon the Thames was the Abbey Mill, near a wharf where the corn and fish brought from London in a boat were landed. We find mention of the Hostillar's mead, and the Abbot's mead.

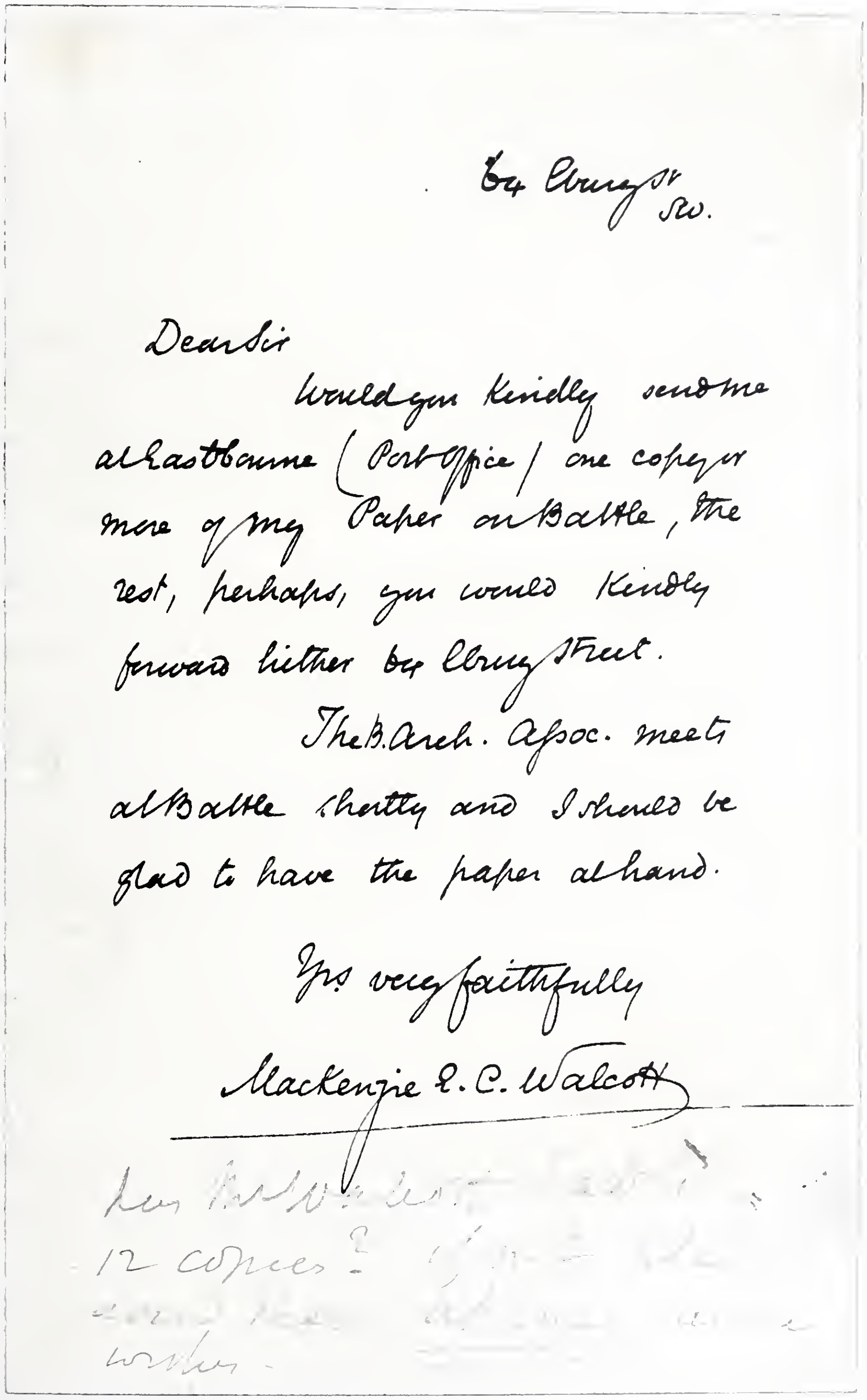
In the Almonry the old clothes and fragments were distributed to the poor in the Dolehouse.

In the Tailory was the bath house. There was a chamber (domus) for the writers.

The Chapter House contained a lectern for the martyrology, pulpit for collation and sermon, and crucifix. Before the President's seat was a step where the Venia was made. The lowest place was near the door. The ordinary monks sat in order of their admission. In it corporal punishment was inflicted, novices were admitted, penance adjudged, and conventual councils held and charges made. Over the Chapter House door was an image of the Virgin, and facing it a delinquent monk sat in cloister time reading the Psalms.

The Church. On the south side sat the Abbot, Prior of cloister, the third Prior and Præcentor; and on the north side the Prior, the Sub-Prior, fourth Prior and Succentor. The choir contained a high altar and choir altar, stalls for the monks, forms for novices, and a bench or trunculum for defaulters in the centre. A Reclusorium nostri fratris is mentioned. This cell was probably situated in the choir aisle Mats were laid on the benches and in the stalls, and before the altars; rushes and hay were strewn in the Presbytery, and in the choir ivy leaves and sea rushes. A lantern was carried through the choir at nocturns to detect sleepers. The church bells were rung by the four church servants or the brethren of the guild. Three tapers burned perpetually before the high altar, and five others in silver basons in the Chapel of St. Edward; two in the middle and two over the tombs of Queen Matilda and Queen Edgitha; on great festivals five lamps were also burning at certain times at the Holy Cross altar, at St. Paul's altar, (where the people came up on one side and descended on the other to kiss the feet of the crucifix), at the Old Lady altar, at the Trinity altar, and at St. Benedict's altar. Lights burned at the antiphonar desk, on the west side of the choir door and in the watchers' chamber, and on great days a seven-light chandelier. The coronation robe of St. Edward was also exhibited at times. In the Lady Chapel on the feasts of assumption and purification 20 tapers were lighted on the beam before the altar, 50 round the altar, and tapers in angels' hands.

⁂ I should mention that there were three round apses at the east end of St. Martin-le-Grand, at Dover, the foundation of which was almost contemporaneous with Battle.



64 Ebury St
S.W.

Dear Sir

Would you kindly send me at Eastbourne (Post Office) one copy or more of my Paper on Battle, the rest, perhaps, you would kindly forward hither 64 Ebury Street.

The B. Arch. Assoc. meets at Battle shortly and I should be glad to have the paper at hand.

Yrs very faithfully

Mackenzie E. C. Walcott

Rev. Mr Walcott [illegible]
12 copies? [illegible]
[illegible]
wishes.

ON THE PRACTISE OF ARCHITECTS AND THE LAW OF THE LAND IN RESPECT TO EASEMENTS OF LIGHT AND AIR.

By Professor Donaldson, Ex-President.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, May 28th, 1866.

In presuming to suggest, at the meeting when Mr. Kerr read his very important paper on the subject of Ancient Rights of Light and Air, that the discussion on the subject should be deferred to another evening, as it was then too late to enter upon its consideration so fully as it deserved, I had no idea of opening the discussion myself; but as our Honorary Secretaries requested me to do so, I felt myself compelled to yield to their wish. Not that I think myself at all competent adequately to grapple with so complex a subject, but as there are many recent decisions, which have strictly and accurately laid down the law, hitherto supposed to be vague and apparently undefined, and as this interpretation of the rights of owners appears to me, as it does to Professor Kerr, to trench arbitrarily by its empirical dictum, and seemingly at variance with natural rights, and to interfere with the improvement and necessary enlargement of property in cities,—I venture to submit to your consideration a few very important observations on the matter. It is to be hoped that some legal mind will take up the subject, and produce a reliable work embodying accurately and fully the law as it is, and suggest some remedies for the wrongs it inflicts. It is not unbecoming for architects to endeavour to unravel these mysteries, as it is upon their statements of facts and opinions as to probable results, that action is taken, and as their own designs for buildings in towns must conform to the limited terms of the law. But I must observe, also, that the judges are apt not to place that reliance upon professional evidence to which we may consider it entitled, from the spirit of one-sided advocacy from which it too often proceeds, and the necessarily contradictory statements made; and I think that our friend Professor Kerr must invent some more simple diagrams and illustrations of his theory, ere he will induce a judge or jury to make themselves acquainted with his ingenious but elaborate series of lines, the very sight of which is apt to bewilder the previously uninitiated.

This Light and Air question,—one of great importance, as involving serious consequences to owners and occupiers of property—divides itself into two clear and distinct divisions: The rights of the owner—The rights of the neighbour. It might be supposed that the natural right of the owner of the soil would be absolute,—“ ab imo usque ad cœlum ; ” but this enjoyment is limited by the legal restriction, necessarily artificial, as to the extent to which such right shall not diminish the enjoyment to which the neighbour is entitled. But there are intrinsic and extrinsic rights which may apply to a plot. It would appear a natural conclusion, that whatever may be the extent of the enjoyments of an owner in respect of light and air, they should arise from or be provided on his own plot; but there are usually public rights attached thereto, which afford him certain easements, as, for instance, when the plot abuts on a public way, which thus affords him access, light and air, on that side. And there are also rights derived from the neighbouring land, which by law belong to him from prescriptive right, that is, not a mere natural right, but a right from previous enjoyment for a certain period of time. This period has been fixed by law (2 & 3 Will. IV. c. 71) at twenty years, as follows:—

“ Clause 3. And be it further enacted, that when the access and use of light to and for any dwelling house, workshop or other building shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent or agreement expressly made or given for that purpose by deed or writing."

As quoted by Lord Chancellor (*Yates* v. *Jack*, 1866), there was supposed to exist previously a local custom in the City of London, by which the owner of a house in any street was permitted to raise it to whatever height he might think fit.

It seems strange that the law should so disregard the inherent rights of an owner, that if a neighbour should cover his plot with a building, and derive all his easements of air and light from his neighbour's land, the law does not protect the neighbours from such an assumption, nor even by law to compel the abatement, but forces them to protect their rights by the expensive process of erections in front thereof—erections possibly useless and nuisances to themselves, and occupying space. Why should they not be able to protect their rights by proper notices, or by law be enabled, as, I believe, is the case in France, by a short process to compel the abatement of the trespass?

And another case may arise of the limitation of enjoyment of one's property. On one side of a street there may be a house, say 20 feet high, and on the opposite plot no building. The owner of this plot may not erect any building which may obstruct the light of the low building, which may be only 20 feet high, although if he were able to carry up on his own ground a building 50 or 60 feet high it would be immensely beneficial to him. But this right as to direct light applies even to an obstruction in a lateral direction, as the owner of an erection of twenty years' atanding exercises as to light and air a lordship to the properties not only in front but to the right and left of him.

Vice-Chancellor Kindersley. MARTIN *v.* HEADON. 4th May, 1866.

Reported in the *Times*, May 7. Re Premises Conduit Place, London Street, Paddington. The question then here was the quantity of light obstructed, and it must be borne in mind that the actual amount of sky area lost was not only to be taken into account, but the space to which the plaintiff's right had already been reduced by the previous buildings. Looking at it in that point of view, although it was true that here the obstruction was oblique, an enormous amount of sky area was obstructed—more than half. The evidence established a serious and material injury, and it appeared clearly that the plaintiff was obliged to cease from using his cutting room in consequence, and that a previous occupant had left because the defendant's houses were built.

A defendant had not a right to say that, because a plaintiff could carry on his business elsewhere, he was not entitled to relief. He was entitled to be relieved against whatever interfered with his business of a tradesman, or his convenience and enjoyment if not There must be a declaration that the plaintiff was entitled to damages, and the usual inquiry on the subject.

But let us suppose, that the neighbour or neighbours, from unwillingness to incur the wasteful expense of screen, or not at the moment aware of the extent to which the erection may have compromised his rights, should have allowed such trespass to the builder for twenty years, then the plenitude of right accrues to the builder, as if it were an injury to him,—who has already for twenty years by sufferance enjoyed all the advantages of the encroachment upon the adjoining rights,—not to have established his control over his neighbour's property. But the unrighteousness of the present state of the law becomes one-sided and more oppressive in regard to what may be called the inherent or primitive natural rights of property, when we consider the case of two plots opposite to each other, on either side of a street or public thoroughfare. The one has an erection, say 50 or 60 feet, his opposite neighbour one of 15 or 20 feet. The latter may not raise his building, as it may obscure the light of the lower part of the building 50 or 60 feet high, because it was not convenient to him to carry up his 15 or 20 feet building to a greater height previously, and thus he is tied down to his dwarfish proportions in face of his gigantic opponent, and must so remain. Ought not the public way to confer at all events equal rights on the owners of buildings on both sides, and at least to allow of an erection to a like height on both sides. Or why should the dwarf on one side be able to stunt the growth of the aspiring erection on the other, and to keep it down to the like diminutive elevation of 15 or 20 feet, and not leave both free. Does not this become a public wrong, as reducing the value of property, the improvement of which is a public benefit.

Let us also imagine another case. A man has his building, A, say 40 or 50 feet high on a plot of ground, which building immediately abuts on a vacant plot, B, say 20 feet wide; but on the other side of the vacant plot is another plot, C, on which a man desires to erect a lofty building, say 40 or 50 feet high, which may intercept the light and air of the original building; why should he be restrained from exercising his morally just control over his own plot, when a stranger intervenes between the two?

Substantial damage must be done. The term "considerably obstructed" does not enable the Judge to form an opinion. The mere having to alter the position of a table to work at in order to see better is not sufficient evidence.

Lord Justice Turner. *Re* CURRIER'S COMPANY *v.* CORBETT.

It is not every impediment to the access of light and air which will warrant the interference of this Court by way of injunction, or even entitle a party alleging himself to be injured to damages at law. In order to found a title to relief in equity or even at law in respect of such an impediment, some material or substantial injury must be established, and the onus of proving the injury must rest of course upon the plaintiff.

The Lord Chancellor in CLARKE *v.* CLARKE. Nov. 20, 25, 1865,

Stated—The Court will not restrain the erection of a building merely because it deprives an ancient window of some portion of light; but will do so, when the obstruction is such as to interfere with the ordinary occupations of life. A lateral obstruction may be such a nuisance to be restrained.

Such questions are questions of degree. Whether the obstruction be such as to deprive the complaining party of such a supply of light and air as he might reasonably calculate on enjoying.

Questions such as these cannot be treated as abstract ones, for much turns on the nature and locality of the windows.

The room might be rendered less cheerful during winter months, but the obstruction does not amount to a nuisance, as it is not shut out from the open sky and driven to depend upon reflected light.

The plaintiff is bound to show that such obstruction interfered with the ordinary occupation of life.

Far from saying that no obstruction can be such as to amount to a nuisance, unless opposite to the light obstructed: but in estimating the quantum of inconvenience the circumstance, that its effect can only be felt laterally, is then not to be overlooked.

The real question is not what is, scientifically estimated, the amount of light intercepted, but whether the light is so obstructed as to cause *material* inconvenience to the occupiers of the house in the *ordinary occupations* of life.

Lord Chancellor. YATES *v.* JACK. 1866. Jan. 16, 19, 21, 22, March 24.

The owner of ancient lights is entitled not only to sufficient light for the purpose of his then business, but to all the light which he had enjoyed previously to the interruption sought to be constrained.

Where an injunction was granted to restrain the interruption of an ancient light, the Court gave the Defendant leave to apply in order to ascertain whether any building, which he might propose to erect, would cause such an interruption.

The Defendants had pleaded that no material injury would be done to the Plaintiffs, and particulary that there would be ample light for the business carried on by them, and, in fact, that the screening off of the direct rays of the sun would be a positive advantage.

The Plaintiffs objected to limitation to their right of light and air to only so much as will enable them to carry on their present business, and also objected to the Defendant being allowed to adduce further evidence with reference to possible alterations to such an extent as not to interfere with the rights of Plaintiffs.

Lord Chancellor. Although for some purposes of a trade it is necessary to exclude the direct rays of the sun,—yet it is comparatively an easy thing to shade off too powerful a glare, but no adequate substitute can be found for a deficient supply of daylight.

The right conferred by the 2nd and 3rd Will. IV, c. 71, is an absolute indefeasible right to the enjoyment of the light without reference to the purposes for which it has been used.

The Defendant had not established his defence unless he had shown that for whatever purpose the Plaintiffs might wish to employ the light there would be no material interference with it.

House of Lords. TAPLING *v.* JONES. 16th March, 1865.

Lord Chancellors Cranworth and Chelmsford.

A house, 107, Wood Street, Cheapside, City of London, originally consisted of three storeys, with one window in each story. The owner A altered in July and August, 1857, the windows in the two lower storeys, but so as to make them both to occupy part of the old apertures, and retained the window in the third story unaltered; and he built two additional storeys, in each of which he put a new window. After these alterations were completed, B built up a wall opposite on the adjoining land in Gresham Street West, and completed it by end of October, 1857, to such a height as to obscure the whole of the lights of A's building. It was impossible for B to obstruct the upper windows without obstructing the *unaltered* window on the third floor and that portion of the ancient windows on the first and second floors, and the new upper windows could not have been obstructed in a more convenient manner.

After the wall was finished, A, in February, 1858, caused the altered windows to be restored to their original state, and the new windows to be blocked up, and then called upon B to pull down his wall, which was then obstructing ancient lights only. B refused to do so.

This was an appeal from the decision of the Court of Exchequer Chamber. The cause was tried before Chief Justice Cockburn at Guildhall, February, 1859, and a verdict was taken by consent, found for the Plaintiff A, subject to a special case embodying the facts.

Whilst the wall of B was being erected A gave B notice to desist from erection thereof.

B contended that A by the character of the alterations made by him in the old lights, and by the nature and position of his new windows and lights, manifested three distinct purposes.

First, His intention to assert a permanent claim or right to the new windows and lights, and thereby induced B to oppose, and justified him in opposing the encroachment made by an obstruction of a permanent nature.

Secondly, That A, by the alteration of the old windows and lights and the opening of additional ones, abandoned, or forfeited, or lost his original right to the access of light and air as afforded by the old windows.

Thirdly, That A, by the restoration of the old windows to their original state, did not regain as against B his original right to light and air, or acquire any right or title to require the removal of the building of B, or to sue in respect thereof, as, by the subsequent restoration of the said windows to their original state, the easement or servitude to which the premises of A were originally subject could not be reimposed.

The Lord Chancellor, in delivering his opinion, quoted the 2 & 3 Will. IV. c. 71, as to prescriptive right, and added upon this section it is material to observe that the right to what is called an ancient light now depends upon positive enactment. It is matter "juris positivi" and does not require, and therefore ought not to be rested on any presumption of grant or fiction of a licence having been obtained from the adjoining proprietor. Written consent or agreement may be used for the purpose of accounting for the enjoyment of the servitude, and thereby preventing the title, which would otherwise arise, from uninterrupted user or possession during the requisite period. This observation is material, because I think it will be found that error in some decided cases has arisen from the fact of the Courts treating the right as originating in a presumed grant or licence. It must also be observed that after an enjoyment of an access of light for twenty years without interruption, the right is declared by the statute to be absolute and indefeasible, and it would seem therefore that it cannot be lost or defeated by a subsequent temporary intermission of enjoyment not amounting to abandonment. Moreover, this absolute and indefeasible right, which is the creation of the statute, is not subjected to any condition or qualification, nor is it made liable to be affected or prejudiced by any attempt to extend the access or the use of the light beyond that, which, having been enjoyed uninterruptedly during the required period, is declared to be not liable to be defeated.

Lord Chelmsford also laid down, in the course of his opinion on this case, the following important points of law as recognized and established:—

It is not correct to say that the plaintiff, by putting new windows into his house, or altering the dimensions of the old ones, "exceeded the limit of his right," because the owner of a house has a right at all times, apart of course from any agreement to the contrary, to open as many windows in his house as he pleases. By the exercise of the right he may materially interfere with the comfort and enjoyment of his neighbours, *but of this species of injury the law takes no cognizance.* It leaves every one to his self-defence against an annoyance of this description, and the only remedy in the power of the adjoining owner is to build on his own ground, and so shut out the offensive windows.

By the Prescription Act then, after twenty years user of lights, the owner acquires an absolute and indefeasible right, which so far restricts the adjoining owner in the use of his own property, that he can do nothing upon his own property, which may have the effect of obstructing them. The right thus acquired must necessarily be confined to the exact dimensions of the opening, through which access of light and air has been permitted. As to everything beyond, the parties possess exactly the same relative rights which they had before, the owner of the privileged window does nothing unlawful, if he enlarges it, or if he makes a new window in a different situation. The adjoining owner is at liberty to build upon his own ground so as to obstruct the addition to the old window, or to shut out the new one, but he does not regain his former right of obstructing the old window, which he had lost by acquiescence; nor does the owner of the old window lose his former absolute and indefeasible right to it, which he had gained by length of user. The right continues uninterruptedly until some unequivocal act of intentionaal abandonment is done by the person who has acquired it, which will admit the adjoining owner to the unrestricted use of his own premises. It will, of course, be a question in each case whether the circumstances satisfactorily establish an intention to abandon altogether the future enjoyment and exercise of the right.

If such an intention is clearly manifested, the adjoining owner may build as he pleases upon his own land; and should the owner of the previously existing window restore the former state of things, he could not compel the removal of any building, which has been placed upon the ground during the interval, for a right once abandoned is abandoned for ever.

But the counsel for the appellant carried their argument far beyond this point. The part of the case, which was the most difficult for them to encounter, was that, which related to the unaltered window in the third floor. As to this they contended, that the alteration of the windows below and the addition of the windows above so changed the character of the previously acquired right to light and air, as entirely to destroy it. But it is not easy to comprehend how this effect can be produced by acts wholly unconnected with an ancient window, which the owner could carefully retain in its original state, and the learned counsel did not seem to expect much success from their argument in its application to the unaltered windows in the lower floors. As to these they contended that the owner of ancient windows is bound to keep himself within their original dimensions, and that if he changes or enlarges them in any way, although he retains the old openings in whole or part, he must either be taken to have relinquished his right, or to have lost it. But upon what principle can it be said, that a person, by endeavouring to extend a right, must be held to have abandoned it; when, so far from manifesting any such intention, he evinces his determination to retain it, and to acquire something beyond it. If under such circumstances abandonment cannot be assumed, as little can it be said that it is a cause of forfeiture. It must always be borne in mind, that it is no unlawful act for the owner of a house to break out a window, or to enlarge an ancient window, although in the latter case some difficulty may be thrown upon the adjoining owner to distinguish the old part from the new, and so to ascertain which part he has a right to obstruct and which is privileged from his obstruction.

The adjoining owner can therefore always protect himself by a little vigilance, and if he allows rights to be acquired, under shelter of which he is prevented using his land for the purpose of defence against the acts of his neighbour, he must blame his own want of foresight and precaution, and not the law, which will not permit an ancient right to be invaded upon any such assumed ground of necessity.

Such is the most recent and decided judgment in the highest court of appeal upon the matter of light and air, and must necesarily rule all subsequent cases. And this stringency of the law applies in the case, where a man has one window just sufficient for his purpose: an opposite neighbour desires to build up in front at a reasonable distance. The room with the one window might have all the light already possessed, and even more, if another might be introduced or the window enlarged; but this is not allowed, if the owner object, although his opposite neighbour might be willing to be at the expense.

We will now consider the French law upon the subject, and it is extremely simple, as explained in the following work in the library of the Institute:—

Manuel des Lois du Bâtiment élaboré par la Société Centrale de Architectes. 8o. Paris, 1863.

By the French law no owner, can make an opening in his external wall, so as to overlook the property of an adjoining owner but under certain restrictions. It must have an iron grating, the bars of which must not be wider apart than 4 inches, or be enclosed by ground glass, fixed in with plaster so as not to open; and the openings, which may be of any size, may not have the sill lower than 6 feet above the floor. These precautions shew that such windows are a concession to give light to a room or closet, but so that the adjoining owner's property may not be overlooked. The builder must give notice to the adjoining owner of such intended openings, and indemnify him for any damage caused by such openings; and the adjoining owner may close them upon buying the half of the wall.

These regulations attach to any wall within the distance of 6 feet from the land of an adjoining owner, and never acquire any prescriptive right. And the adjoining owner, if it be in the country, may at any time carry up another wall immediately adjoining the previous wall.

One may not have a window overlooking the neighbour's grounds, or a balcony or other projection, except there be a distance of 6 feet between front of the balcony or the projection or between the wall in which the windows are and the land of the adjoining owner.

Nor may there be an oblique view nearer than 2 feet from the end.

But supposing an owner has acquired the right of a direct view from a window in a wall, which separates two properties, still the adjoining opposite owner may erect a wall or building in front, provided it be at a distance of 6 feet from the face of the said wall, such distance of 6 feet being upon his own ground; and any return wall may be built, provided it be at the distance of 2 feet from the opening.

No prescriptive title precludes the right of the adjoining owner. Thus it appears that the French law jealously protects the rights of the owner of the soil, and allows him to carry up an erection, however it may affect adjoining owners, provided it be done at a distance of 6 feet within his own boundary.

The following are some of the most important recent cases published in the *Weekly Reporter*, 59, Carey Street, Lincoln's Inn Fields.

Lord Chancellor. ISENBERG *v.* EAST INDIA HOUSE ESTATE COMPANY. Dec. 9, 19, 1863.

Ancient lights—Mandatory injunction—Inquiry to assess damages.

Where an injury to a plaintiff's property is of such a nature that it may be amply compensated by a sum of money paid by the defendant, the Court will not grant a mandatory injunction, which would be injurious to the defendant without any corresponding benefit to the plaintiff, but will direct an inquiry as to the amount of damages.

Thus, where the erection of a building of greater height than a former one on the same site, was alleged to obstruct the plaintiff's light, the Lord Chancellor refused to exercise the jurisdiction of granting a mandatory injunction, but directed an inquiry before himself, to ascertain the damage sustained, and the amount of compensation.

This was an appeal from a decree of the Master of the Rolls.

Lord Chancellor. JACKSON *v.* THE DUKE OF NEWCASTLE. Feb. 20, 24; March 19; June 25; July 2.

Ancient lights—Injunction—Business premises—Possible future injury.

The Court will not interfere by injunction to prevent the obstruction of the ancient lights of a building exclusively used for business purposes, unless the obstruction would, to a material extent, render it less suitable for the business actually carried on there, even though, if the premises were to be afterwards applied to some other purpose, their value might be diminished by the threatened obstruction of light.

Accordingly, in a case where the injury by a threatened obstruction of light to the plaintiff's place of business was such as not materially to affect its value for the use to which it was then applied, and was such as could be redressed by damages, the Court (on appeal) refused to continue the injunction, and it was agreed that the amount of damages should be assessed by the Lord Chancellor.

The propriety of a judge in a Court of equity making a personal inspection of the buildings in such a case considered.

This was an appeal from an order of the Master of the Rolls, granting an injunction to restrain the defendant from erecting, or continuing to erect, a wall on the site of certain stables of a greater height than the elevation of the old buildings as they formally stood thereon, so as to darken or obscure any of the plaintiff's ancient lights, or to obstruct the free access of light and air as heretofore to the plaintiff's premises in No. 21, Cockspur-street.

Master of Rolls. LAWRENCE *v.* AUSTIN. DURELL *v.* PRITCHARD. May 31; June 1, 6, 7, 8, 1865.

Injunction—Ancient lights—Damages in equity—Building completed before bill filed—Jurisdiction—21 & 22 Vict. c. 27.

Where a building, which interferes with the plaintiff's right to light and air or any other easement, has been actually completed by the defendant before the bill is filed, the Court of Chancery, in the absence of fraud, will grant neither a mandatory injunction nor damages, but will leave the plaintiff to his remedy at law.

If any part of the building is unfinished at the date of the filing of the bill, the Court of Chancery has jurisdiction over the matter, and will grant an injunction as to the unfinished part, and an inquiry as to damages as to the finished part.

These were two suits relating to interference with ancient lights, and raising questions of a similar nature, and the Court gave but one judgment in both cases.

Lord Justice Knight Bruce. THE CURRIERS' COMPANY *v.* CORBETT. June 12, 13; Aug. 3, 1865.

Injunction—Ancient lights—Damages—Material injury—Mandatory injunction—Air—Custom of the City of London—Prescription Act.

It is not every interference with the access of light which will entitle a plaintiff to the interference of a court of equity; he must show material injury in order to obtain the assistance of the Court.

Semble, per TURNER, L. J.—Where a bill seeks a merely preventive remedy, a mandatory injunction cannot be granted.

Quære, whether a mandatory injunction will be granted ordering the removal of works already completed.

This was an appeal from an order made by Vice-Chancellor Kindersley on the hearing of the cause. The facts of the case are fully stated in the previous report, *ante*, 538.

TAPLING *v.* JONES. March 16.

Ancient lights—Obstruction—Encroachment—Abandonment of right—Prescription Act, 2 & 3 Will. IV, c. 71.

In making alterations in a house which originally consisted of three stories, with one window in each story, A. altered the windows in the two lower stories, but so as to make them both occupy part of the old apertures, and retained the window in the third story unaltered, and built two additional stories, in each of which he put a new window. After these alterations were completed, B. built up a wall on the adjoining land to such a height as to obscure the whole of the lights in A.'s buildings. It was impossible for B. to obstruct the upper windows without obstructing the unaltered window on the third floor and that portion of the windows, which occupied the site of the ancient windows on the first and second floors: and the new upper windows could not have been obstructed in a more convenient manner. After the wall was finished, A. caused the altered windows to be restored to their original state, and the new windows to be blocked up, and then called upon B. to pull down his wall. B. refused to do so, and an action was brought.

Held, that B. was not justified in maintaining the obstruction to A.'s lights.

Held, further, that the obstruction by B. of such of A.'s lights as were ancient was an illegal obstruction from the beginning.

Renshaw v. *Bean*, 18 Q. B. 112, and *Hutchinson* v. *Copestake*, 9 C. B. N. S. 863, overruled.

This was an appeal from the decision of the Court of Exchequer Chamber, reported 12 C. B. N. S. 826, affirming the judgment of the Court of Common Pleas, reported 10 W. R. 441, in an action for obstructing and keeping obstructed certain lights of the respondent, in a warehouse No. 107, Wood Street, Cheapside, in the city of London.

The cause was tried before Cockburn, C.J., at Guildhall, in February, 1859, and a verdict was, by consent, found for the plaintiff (the respondent), snbject to a special case embodying the facts.

N.B.—The appeal to the House of Lords largely quoted in the preceding pages.

Vice-Chancellor Wood. DENT *v.* AUCTION MART COMPANY (LIMITED). PILGRIM *v.* THE SAME. THE MERCERS' COMPANY *v.* THE SAME.

February 21, 22, 23, 26, 27; March 2, 28, 1866.

Ancient lights—Carrying on business beneficially—Injunction—Offer to abstain from proceedings—Town and country light—Possible future uses of the premises—Jury—Lateral light—Air—Damage to foundations.

The summing-up of BEST, C.J., in *Back* v. *Stacey*, 2 C. & P. 465, commented on. The expression there used, "carrying on the business beneficially," does not mean merely "not losing customers," but also "being able to carry on the business as beneficially to the health and ability of the person carrying it on."

Where substantial damages, as distinguished from some £5. or £10., will be given at law for interference with light, the Court will interpose by injunction. The Court will not allow a man to inflict an injury upon his neighbour, and then purchase him out without any Act of Parliament having been obtained for that purpose.

Nor if a person complaining of interference with his light has offered to withdraw his opposition for a fixed sum, will the Court gather from that fact alone that the damage is not irreparable, and send the case to a jury to assess the exact damage done. Were the Court to do so, it would be conceding to persons desirous of erecting buildings the existence of an unknown Act of Parliament, with the provisions of the Lands Clauses Act, and enabling them to force the sale of the plaintiff's right, not at his own valuation, but at the estimate of a jury.

The case of *Yates* v. *Jack*, *suprà*, 618, has made it clear that the right of a person living in a town to protection from interference with his light is not different from the light of a person living in the country.

The observation of the Lord Chancellor in that case, that he was to regard the possible uses to which the plaintiff's house might be put, may be reconciled with the malthouse case—*Martin* v. *Goble*, 1 Camp. 320—by supposing that his Lordship meant the uses of the house as it stands at the time of the complaint, and not if and when rebuilt for some other and totally different purposes.

In cases of this kind the following defences are useless:—That the plaintiff will still have as much light as many other persons; that they might have made their windows larger; that they had sometimes used Venetian blinds; that a room said to be used for a certain purpose was not a good one for that purpose, and that it had been used for that purpose *clàm;* and that the defendants would face their buildings with glazed tiles.

The doctrine of the Court as to interference with air rests on nuisance.

The benefit of sending a case of this kind to a jury is doubtful. The jury can contribute nothing but the view; and their view is likely to be prejudiced, since they see only the existing state of the light, which may be equal to the ordinary state of the light in the neighbourhood.

Interference with lateral light should be restrained; for if it were not, all the neighbours round might obstruct the light, and so in many place almost total darkness might be caused.

If at the time of filing the bill such damage is being done to the foundation of a house, that the plaintiff entertains serious fear lest the house should come down, the fact that, at the hearing when the defendants have completed their works near the foundations, the actual damage done is trifling, will not prevent the bill from being upheld, even if the defendants show that they never once departed from their original plans of working.

Form of order restraining the erection of buildings, following that in *Stokes* v. *The City Offices Company*, 13 W. R. 537.

These three suits came on together for motion for decree.

Mr. ARTHUR ASHPITEL, Fellow, said they were extremely obliged to his learned and excellent friend who had just addressed them for the valuable information he had conveyed; but though he had pointed out very ably what were the grievances of the present system, he had not suggested adequate remedies. He believed, with regard to the question of light and air, like all questions of right and wrong, and all questions of equity between man and man, it was totally impossible to provide an Act of Parliament to put them to rights, any more than it was to comply with the request of the Fenian gentlemen the other day, who said "Why don't they pass an Act of Parliament at once to make ould Ireland happy for ever?" He believed no act could ever be drawn to meet all the numerous, involved, and intricate questions arising as to the rights and wrongs of light and air. But there was one simple rule amongst themselves—a good old Christian rule—to do to others as we would wish them to do to us—treat your neighbour as you would wish him to treat you! Abstract nothing from him that is his! Use your own so that you hurt no one else. *Utere tuo ut nemini non lædas.* This was the great maxim of the Roman law; but his friend had enunciated some principles which were rather startling to him. He had sketched a house, divided into a certain number of storeys, which belongs to A; and also a house on the other side of the way, belonging to B. His friend asked "why may not B raise his house to the same height as A has done?" He, the speaker, replied "A bought that property because there was a certain light coming there. A says I am a watchmaker; I want a great deal of light for my work;" and he asks the former proprietor "what must I give you per annum as a rent for those premises, or what sum must I pay you for the absolute purchase of them?" The owner demands a large price, because he is aware there is ample and uninterrupted light for his business, and on that account the premises are valuable, which they would not be if B raised his house and obstructed such light. What then became of the question of the right or the wrong if the one man was to be at liberty to raise his building so as to obstruct the other man's property, and ruin his business? [Professor DONALDSON. What is the equity of that?] Mr. ASHPITEL. The equity that what A purchased he should be entitled to enjoy, with all its rights appertaining thereto; and no man ought to deprive him of those rights. [Professor DONALDSON. Unequitable rights!] "Unequitable right" is a contradiction in terms; it is as much as to say rightful wrong, if there is justice between man and man; if he had a right to anything he possessed, he had a right to the light and air which came from the atmosphere; and if he purchased that property knowing the house opposite was of a lower height, his neighbour had no more right to deprive him of that light and air than he had a right to take anything of a more tangible nature from him. [Professor DONALDSON. Not as a legal right.] Mr. ASHPITEL. That which was legal was equitable in principle, though, perhaps, through technicalities, it might not be so in practice. He only laid down this principle; if he bought a property because it was in such a position that it was advantageous and valuable to him on account of a certain position of the property opposite, he bought it with all its rights, and if another man infringed upon those rights he did him wrong and harm. Now the present argument seemed to shew that they could not do much in altering the law in this matter, and they could not escape this condition, that if A were a watch-maker, giving a large price for his property because he could exercise his trade there, they could not alter the law so as to enable B to injure A for his (B's), own private profit without inflicting a wrong, an injustice towards him. [A MEMBER. That supposes the properties to be situate in public highway?] Mr. ASHPITEL did not care whether the open space was private or public; he did not consider it made any difference in the principles, if he made watches there, whether it was lighted over a private garden or a public highway. His friend had confessed it was contrary to law. He put it to every one present, whether it was not contrary to justice and equity between man and man, that, having bought property with certain rights, those rights should be taken away for another's profit? If they thought in this room any man having purchased property with certain rights attaching to it, that any person might breach those rights, there was an end to respect to *meum* and *tuum*.

Professor DONALDSON said his friend was right in the law, and he (Professor Donaldson) had himself affirmed that view in the cases he had quoted; he went to the abstract principle of right and said—persons who had rights must provide casements on their own property, and not go for casement to other properties.

Mr. ASHPITEL said a man having rights and easements, his neighbour ought not to rob him of them. In what way was he to provide the light on his own property? To provide the light was absurd in terms. How could it be done? They got it from the heavens, and if it was obstructed in its passage there was an injury. It might as well be said you shall breathe no air except that which is generated on your own premises. What is an "easement"? The *servitus* of the Roman law, a right of water-course, drainage, light, air, and sometimes of walking (*spatiandi*), and even of pasturage on the freehold of a neighbour. But it must be confessed, after all, they were met here not to talk so much about right and wrong as the practices of architects in this matter. He found in his own practice—and he had had a good deal to do with the subject—two sorts of cases. The one where a man boldly and flagrantly invaded his neighbour's right, trusting to the quibbles of the law to scramble through somehow. He had heard of a case where a wall was run up before a window during the night. In the morning the gentleman's little boy went into his bedroom exclaiming, "Papa, breakfast is ready," but the gentleman remarked, "Why, it is not light yet." They had built up the wall during the night, and absolutely blocked up the window. There was also a case where, within four feet of a room appropriated to gun-making—a trade next, perhaps, to watch-making requiring the best light—an adjoining owner ran up a building thirty feet high. There was the gun-making room, here the four feet of space, and the adjacent owner B ran up, on his own ground, a building something like thirty feet high. The intermediate space C belonged to A, the gun-maker, and gentlemen were found to file affidavits stating that they did not believe any damage was done to A. But Vice-Chancellor Kindersley remarked, "You might as well tell me that you could lower me down a well thirty feet deep, and say I could see as well as if I were on the surface." He thought the discussion to-night, according to the notice issued, was not so much upon the law on the subject as the practice among themselves. Was it legally or equitably justifiable that one should, at a distance of four feet from a room, run up a wall thirty feet above this building? The parties had enjoyed that window for forty years or more. It must be confessed there were errors on both sides. In the language of the poet—"Iliacos intra muros peccatur et extra." He knew a case where there was a house with garret story, the roof had been taken off and the walls raised up so as to make it a square storey. In such a case not a pin's worth of injury was done, for the sky line was unaltered, and yet an action was brought. He remembered in the course of ten days in last year he was called in, in four different cases, in two of which he could not support the claim for damages for a moment, in another case the injured party was recouped by an alteration and small payment, and the remaining one was taken into court and won. All this brought him really to the main point before them this evening—that was the paper of his friend Professor Kerr. They had hitherto gone into court giving abstract opinions; those opinions, as they all knew, were very much based upon the statements of clients that such and such were facts, which facts other witnesses were to prove. Now one of the facts the most often asserted, and which he believed was the most fertile source of litigation, arose from this simple circumstance—viz. when a building was pulled down it was usually done in the spring, and the re-building in the summer months, when of course there was the greatest quantity of daylight. The consequence was an enormous flood of light fell upon the premises during the rebuilding, and the neighbours went on for months enjoying a greater amount of light than ever they had; but as the building grew up to its old height the days got shorter, and the tenants of the opposite premises found that they could not work so long without gas as they had been able to do before the new house was finished, and they began to complain that their opposite neighbour was building out their light. They would prove that they could not work to so late by an hour at boot making or stitching as they had been accustomed to do, and yet perhaps the same wall had not been carried up an inch higher than it was before. This was a very fertile source of litigation; you give a man a temporary advantage and he does not like to part with it, just as it is said there are some men who cannot bear to return a borrowed umbrella. But now comes the question, how is the quantum of privation of light, if any, to be solved and brought into a definite shape. The old rule used to be this: a section was made of the two properties. A window is here, and a building stands opposite. Let us suppose this last building was formerly of such a height as to form an angle of 22° with the horizon as viewed from the window; the walls are now raised so as to form an angle of 40°; the difference, 18°, was said to be the measure of the privation of light, and this was not far wrong, as far as height alone was concerned. But they then fell into the same error that some other gentlemen had also fallen into. There had been an attempt to settle all questions by one sweeping rule, viz. to consider a height equivalent to an angle of 45° as affording a sufficient light to any window under any aspect or circumstances. This was falling into two absurdities; first, that it would be illegal for a man to build a narrow erection, —say a chimney shaft, 18 inches wide, if above this angle, which would practically not be of the slightest injury; while below this angle a row of houses of a hundred times the superficial area of such chimney, of course an obstruction a hundred times as great, would be perfectly legal. The second error was, to apply this rule to all aspects. Surely if an angle of 45° was enough for a window lighted from the south, it could not be sufficient for one which could get light only from the east or west, where the sun is at its lowest. But it had been said: "Oh! this angle must be enough, as it is called the portrait painter's angle." It is very true that there was at one time a fashion among portrait painters of putting a sitter by a window and closing the lower half of the shutters, so that the light fell upon his temple at an angle of 45°, but they themselves painted at an open window, and in the largest angle of light they could get; so that the old conventional custom of portrait painting must be considered as quite inapplicable, as quite beside the question. Having explained, then, as well as he could what the usual way of considering the quantum of diminution of light, and having shewn that the obstruction of the same depended nearly as much upon width as upon height, he would venture to take a step further, and consider Professor Kerr's system. He thought that gentleman had hit upon the right way to set to work, and, as he understood him, his principle was to suppose that where there is a wall with an opening, if he looked through this opening or window, he saw the vault of the heavens—a sky space resembling half of a hemisphere. Mr. Kerr then proceeds to divide this half hemisphere vertically and horizontally into any number of equal divisions, resembling the latitudes and longitudes on a terrestial globe. On plan the line of division representing the sky would be a semi-circle. Now, if this plan were divided into any number of equal parts, it would be seen at once that only a very small quantity of light could enter from the side divisions, as so much would be obstructed by the thickness of the wall. More light would be admitted by the next and the next divisions, as front lights are of course more direct, and therefore much less impeded than side lights. In like manner, on the vertical section the sky line would be represented by a quadrant; and in like manner the upper division would admit the least portion of light, as so much would be impeded by the thickness of the window back, cill, &c. Now according to the quantities of these angles by which such light enters, calculated both vertically and horizontally, Professor Kerr gives a value to each division, as a *proportionate* measure of the light entering through each divided space of the apparent sky surface. Having done this, he describes a like number of squares in a manner similar to what is called a map of the world on Mercator's projection, where each square represents an equal number of degrees of latitude and longitude, without regarding the fact that on a globe the degrees of longitude diminish in every latitude the meridian lines running up to the pole, and finishing all in one point. Navigators practically prefer the Mercator system, but as a perspective representation, or regarded orthographically, it is incorrect. Every square is correct in itself as to degrees of longitude and latitude, and all they had to do was to give to every square it respective value. Now, Professor Kerr says, having done this, he would plot out on this Mercator map the line of any houses visible against the sky, and calculate the quantity of light entering the window. He would then plot the lines of any new buildings, on any portion raised by the building owner, and the difference would show the quantity of light obstructed. [PROFESSOR KERR—The quantity of sky surface.] Certainly this was quite independent of light from the rays of the sun. The idea appeared to be extremely valuable. Of course it was subject to modification: a man, whose window faced the south, could do with a considerably less amount than a man whose window faced the west, taking the average of the year. A man whose business was done principally in the afternoon, when the sun is declining, valued west light more than an aspect to the south. He believed there was no possible rule they could lay down to suit every case. They talked about the hardship of the law: the law was not one-sided. His friend must have forgotten the decision in the case of the malting-house which was afterwards converted into a dwelling-house, in which the Court held that the ancient prescriptive right was to so much light as was necessary to carry on the original business for which the building was erected, and not for the altered purpose. He said it was not equitable to abridge a man's vested rights any more than it was to demand a right which he never had before. The law of light and air now stood as he (Mr. Ashpitel) believed in the same position as that of any other easement; as, for instance, that of water power. If a miller has a right to as much water as will efficiently drive a mill of four pair of stones, the owners of the land above the mill may take any surplus water for the purpose of irrigating their land, but they must not take so much as to lessen the efficiency of the mill. On the other hand, the miller must not expect as much water as will drive six pairs of stones. Nor must he expect as much water as will drive his mill all night as well as all day, if for the last twenty years he has worked by day only. As he understood his friend, Mr. Kerr, he said this:—"I cannot measure light and air like wheat in a bushel, or water in a cistern, but by my system I can get a *proportionate* measurement of light abstracted; I can calculate a per centage." It was immaterial to him whether they said this quadrant was 1, 3, or 5, or whether they went up to 20, 30, 40, or 50. He could show them mathematically, in the same way that sailors worked upon the Mercator chart,—he could show them proportions gained or lost; and he did think that was a most valuable point. Of course it must be modified with regard to the application of it to purposes of business. The obstruction of light which would do no harm to a man as a malster would be ruinous to a watchmaker, and all those points must be taken into consideration; but till this time they had no adequate idea of measuring the proportion of light abstracted, nor its relative value: he thought they had now, and it was a step in the right direction. Unhappily too many people were carried away by their feelings in litigated cases, and tempted to become partisans, and some had not the moral courage to tell their clients what they thought was right. Hitherto it had been a difficult thing for anybody to do so, except in very strong cases, because there was no way of measuring a quantum, and a vague suggestion that really you could not see much cause for complaint, was always met with "Oh! but Jones will prove he cannot see to work as he used to do, he will swear that." To cite a case that occurred the other day—A house was re-built, almost exactly as it had formerly stood, but a little bit of a gallery or foot bridge had been carried from the back of one house to the back of another, across a garden at some distance on the north side, and the tenant, a cobbler, averred that owing to that gallery he could not see to make shoes so well as he did before. He (Mr. Ashpitel) believed that man spoke the truth to a certain extent. The house had been pulled down in the spring, and he had had a large flood of light during the whole summer, and though the house was re-built to an inch the same height as before, when the days got shorter and he could not see so well as before, the cobbler argued "*post hoc ergo propter hoc*," because he could not see so well as when the house was demolished, the man thought he had been done an injury! He (Mr. Ashpitel) believed that was at the root of half these cases. He thought they ought to remember two simple rules as to all property, particularly what the law called incorporeal hereditaments and all easements; first, in the words of the Roman law, he had cited before, "exercise your own rights so as not to injure those of your neighbour;" and next, "if the existing rights of your neighbour abridge the value of your own property, remember you bought or obtained it subject to those rights, and paid less for it accordingly." What they were talking about was inherent prescriptive right which could not be abridged without they touched the vitals of all legislation on property. Gentlemen would remember, in the early part of that beautiful book the Cyropædia of Xenophon, the case of the tall boy who had the short coat, and the short boy who had the long coat. Once interfere with the rights of property, once try to do men good against their will, except where "respublica quicquid detrimenti capiat," and there is no knowing the opportunities you give for fraud or private revenge. One word more he must say. If they obstructed light and air they obstructed health. Look at the buildings now in the City, where the rooms are lighted and ventilated by wells 10 feet square and 60 feet high, artificially illuminated with glazed tiles, where sun and wind never comes. Only think what pits these would be for cholera or fever, if they were sent amongst us. These were higher considerations than ground rents, or the getting most money out of the least space. Higher considerations than the exercise of artistic or constructive ability. Let them all remember, if they sensibly diminished the light to a neighbour's property, they also lessened the free passage of air, and thereby not only risked his health but also their own, and that of the public.

Mr. JENNINGS, Fellow, said they had to consider the subject now before them, both as to what the law is and what in justice it should be. The law at present is certainly most unjust, but the state of the law previously to the Act referred to was perhaps, on the whole, satisfactory, as when carried out with a jury it allowed an equitable amount of latitude according to the circumstances. To consider a person had an abstract right to acquire easement over another person's property is interfering with his simple rights. In the case of houses it might be that a large number were built upon land which belonged originally to one owner, who sold them one after another to other parties; therefore it was reasonable to suppose the property was sold subject to certain rights which it was to be presumed could not always be clearly proved. With regard to rights over their neighbours' land, it was a most unfair thing when not originally granted. He was concerned in a case in which a factory eight stories high was built up adjoining a narrow strip of land, and it was impossible to shut out easement, which now prevents the adjoining land being made any use of. When consulted he said the owners could not help themselves, and they must put up with it. He thought, therefore, it would be a much better thing if the law now took, as in the French cases, the exactly opposite course. Then it came to legislative enactment as to what should be provided in the way of light and air. The law which was in existence at one time was, that in no street should a person be at liberty to build a new building which did not leave 45° of light. That was reasonable with regard to new erections, because in making new streets it was assumed that there should be a reasonable law for a new state of things. In the case of air from the back of a building, it was equally beneficial that persons should be precluded from building so as to interfere with the general health of the neighbourhood; therefore the legislature should provide that proper open space should be left at the backs of houses, as well as sufficient width of streets, in laying out new thoroughfares. The difficulty that occurred in dealing with old streets was very great, and one that constantly arose. In the City of London the difficulty of making improvements had been much increased by the alteration of the law. He thought it was better to give no more right of light and air than the owner had on his own property. On the subject of light and air, with the aid of photography, they could arrive with certainty at the amount of light; and it was easy to measure the amount of light at one time and another, so that there was no difficulty in arriving at it if they took the means properly. Mr. Donaldson was engaged with himself in a case in which the jury held that because the servants said they could not see to work in a place so well as they could before, an injury was inflicted; and the judge said if they could see to mend pens at one time and could not do so at another, that was an obstruction of light which would entitle them to an injunction.

Mr. WILLIAM WHITE, Fellow, said the point his friend had started was one which occurred to him while Professor Donaldson was making his remarks with reference to the legal and equitable rights of the parties B, A and C,—the rights of the man C in raising his building and obstructing the lights of A. As Professor Donaldson said, it appeared that the law was clear, and forbade the raising of the building, but he did not think it was so clear what the equity of the case might be, inasmuch as in many cases it would be perfectly justifiable. The whole plot might be evidently building ground, laid out for the purpose of building houses of the same class as those adjoining. People might not be found to take the land. One person at the end of nineteen years might take one plot, and because he went over the twentieth year he was not to build a house of a certain height—that was supposing it to be a public highway, the houses being laid out to be carried on upon a similar plan. The houses might stand unfinished for twenty years; and though the plan showed they were intended to be carried out, yet the law prevented it. In reference to Professor Kerr's plan for measuring out each space of light, he thought the paper might have been accompanied by one or two slight woodcuts, just enough to shew the manner in which the several parts were to be connected and referenced, and also the manner in which he determined the relative value of the several measures, and the reduction of the spherical segments.

Mr. Richard Bell, Fellow, thought there was an object beyond discussing the practice in these matters; for he was in hopes by these discussions they should by long or short reasoning improve the law. He did not agree with Mr. Ashpitel that law was equity in all cases. [Mr. **Ashpitel**—It ought to be.] Professor Donaldson had made a sketch of a house 30 or 40 feet high on one side of a street, with houses 20 feet high on the other side, and his friend Mr. Ashpitel put the case that, having purchased that higher house with a certain right of light, neither by law or equity ought he to be deprived of that light, nor any part of it. That seemed to him an insufficient reason for any such right to be established. There was no principle in it why that should establish a law for preventing the neighbour on the opposite side of a public thoroughfare from carrying his house to a certain height, at least as high as that claiming the right of light. Up to a recent period it was understood that they might build on each side of the public streets as high as they liked. [Professor **Donaldson**—It was the old law of the City of London. Mr. **Ashpitel**—It was entirely a popular fallacy.] The *custom* was, that in the City of London they might build upon any old foundation to what height they pleased. [Professor **Donaldson** said he quoted from one of the judges that that was the *law* of the City of London.] He, Mr. Bell, thought, so far as the public highway was concerned, as they got light from over the highway and not from over the opposite side of the street, although the highway did obtain the light therefrom, that ought to be a line of demarcation, and any restriction as to the lights of houses on either side ought to be governed solely by the requirements for public health. As to the rear of houses there was no prior law to that which now exists. In valuing a property they looked around it and noted the objections, and among them easements of light, that decreased the value of the property. In like manner, if his friend bought the whole of the houses on one side of the street, if the law was such, and he might expect those on the opposite side to be built up to the same height, the price would be regulated accordingly, though probably the same value in either case. He could not sit down without expressing his dissent from Mr. Kerr's principle of measurement of light to windows. He thought there was one grand mistake at the outset. His friend Professor Kerr told them it was the province of the surveyor to furnish the judges with the facts, and they would administer the law upon those facts. He also said many surveyors gave empirical and dogmatic evidence without giving reasons for it. Now in my evidence, he says, I give facts; I give accurate measurement of the light obstructed to any window, by measuring the sky surface excluded or hidden from the window by the new intervening erections, on the following principle:—First, the light approaches a window from the sky as if it were a large concave sphere, and the rays of light converge from its concave surface through the window. But he (Mr. Bell) wanted to know first of all, was it a fact, with respect to the diffusion of light, that the sky resembled a large concave reflector, and that the rays of light converged at all to any window. If so, suppose they had a house with three windows wide and three in height, to which of them did the rays converge? [Professor **Kerr**—Take the middle ones as an average.] He (Mr. Bell) said, but they did not converge at all. Then how does Mr. Kerr proceed to measure the area of the concave hemisphere? why, from a point in the centre of the outside of the window he strikes two semicircles, one horizontal, the other vertical, and he divides these magic circles into certain parts, and multiplies the one into the other—*i. e.* two imaginary Dutch ovens with the top and bottom out, multiplied into each other, give the area of the imaginary concave hemisphere. But why are the circles struck from the centre of the outside of the window? we have no reason given for that. The thing would answer very well if they were flies and carried on their business *outside* the panes of glass; but let it be remembered that the subject matter of the complaint is that you are about to obstruct or have obstructed so much of the light that I enjoy or enjoyed *in the room*, lighted by a certain window. Let his friend, then, go *inside* the room Now he (Mr. Bell) would shew them that they could just as easily, and more accurately, measure the light on the inside, by projecting the points on to all sides of the room from the sides and the head and sill of the window, as the sky surface by the mode of his friend.

Professor KERR, to prevent misunderstanding, would say he could measure as easily *inside*, if they supposed a reflector inside shewing what light there was outside.

Mr. BELL did not admit any reflector at all; he said there was no converging of the rays. His friend said he measured the light to a skylight in the same way as to a window. Now that skylight might be 50 feet long; but they were still *outside* the glass, with one point for centre many feet above the level where the light would be used. Let us take the following diagram, shewing a sale-room, light towards the North. There the light is used at the counter, say 9 feet below the bottom of the skylight, and the light flowing to it comes from points nearly vertical. The Professor says that the way to measure the light is to take the radius for two arcs (vertical and horizontal) from the centre of the skylight, and divide them as before stated; but that mode makes the light nearest the horizon of equal value to that near to and beyond the zenith, which it is not for the purpose required, is that indeed which he could not use, for he must have the light coming from above and on the same side as that on which he stands, otherwise it would throw the goods into shadow, and he would not see the true colours. A broker came forward on one occasion and said, "I as a broker ought to know about these matters more than an architect; a north and north-east light is absolutely essential to our business, and this is the best lighted room I know." And so both the Judge himself and the broker were satisfied that the light used was from the north, whereas in fact he was using only 10° of north light and 28° of south light. He (Mr. Bell) therefore expressed his dissent from the Professor's doctrine. His friend must measure *inside* the room, where the light was positively used. Judges would very soon see that they had then positive facts to deal with, although they might run into the mistake, because a self-satisfied broker told them so, that a north light was being used, while all the while it was a vertical, and so much of south light as could be obtained without having the sunshine with it. He for one would have been glad if his friend had had more time to bestow upon his work. If he could find an opportunity to revise it, he would find in some cases that he had said what he did not quite intend, and if he would correct such redundancy it might give more light to his readers; but at the same time he (Mr. Bell) felt indebted to him for what he had done. He made these observations with great respect, hoping they would be worthy of the attention of the administrators of the law; inasmuch as he considered that the principle and mode of measurement advanced by the Professor had led them into erroneous views, that might be productive of injustice. The true measurement on all occasions could only be made and the positive injury discovered—inside the room, and not by the measurement of the sky surface only on the Professor's plan.

Mr. THOMAS MORRIS, Associate, would say a word upon the scientific part of the subject, which appeared in danger of neglect. There had possibly been over-much attention to the law, and too little discussion about that which especially concerned architects. He would pass over the legal part of the question, except to say that Mr. Kerr spoke of a "necessary" quantity of light. Now, when a man had a right, though it were only in a window, it was an indefeasible thing, and the law would respect it as much as the money in his pocket. It was as unjustifiable to diminish a man's light on the plea that he had more than was necessary, as to deprive him of his surplus cash. No one would leave such a point to arbitration. With regard to the "standard" of light, he thought there was some ground for difference of opinion. Dining rooms in the fashionable quarters of London were purposely kept obscure; they were chiefly used for a special purpose after dark; a very moderate light was sufficient for breakfast and luncheon, and a certain dimness prevented observation from people passing outside; it also helped to keep the rooms cool till the great object of their use came on, when they were suitably prepared and lighted by artificial means. It might be convenient, therefore to put the scale of another author in juxtaposition with the one before them, and he would mention Robert Morris, who wrote a book 130 years ago, in which he put forth a very simple proportion for lighting rooms. When he had found the cubical contents of a room, he took the square root of those contents, and so determined the superficies of window aperture. To give an example in round figures, let a room be 12 feet square and 12 feet high, having a cubic capacity of 1728 feet. The square root is over 41, and this indicates the lighting surface. If the aperture commence at 18 inches from the floor and finish at 18 inches from the ceiling, the height is 9 feet, and the width must necessarily be about 4 feet 6 inches. This appears a safe rule, and may be referred to in Gwilt's "Encyclopædia of Architecture."* It exceeds by one-half Professor Kerr's ratio of 1 foot in width of window to 50 superficial feet of floor. The atmosphere, he scarcely need remind them, was not a reflector. It surrounded the earth for a space of about 40 miles, and when they looked horizontally at distant objects, as at the setting sun, such objects were seen through hundreds of miles of air; when they looked vertically upwards the eye had to pass through about 40 miles of atmosphere; or, taking the density of the air at the level of the earth, which made it only equal to about 5 miles, even that showed the great transparency of the air, and its consequent unfitness to act as a reflector. But supposing the atmosphere were a reflector, they must consider the periphery of such reflector. Taking the radius from the centre of the earth, it would be a radius of 4000 miles; the half of that would give a focal point (at which the rays would meet) of 2000 miles. That enormous radius would show that for all ordinary purposes it must be looked upon as a plane, not a concave, reflector, and the rays from a plane reflector would come straight forward. But if it were a concave mirror, with rays converging in every direction, those rays were merely reflected, and there must be original or incidental rays before there could be reflected rays. Therefore he thought it could only be rightly considered that the light which came into a room came in straight through the wall, and was proportionate to the size of the window and the quantity of light in the atmosphere. In proportion as they had light in the atmosphere so would their room be well or ill lighted. The simple course in cases of obstruction, then, was to look outside and see whether there was anything to prevent the flow of light, not primarily into the room, but into the atmosphere about, and from whence the light must be considered as falling straight into the apartment. He hoped these simple suggestions would be useful to Professor Kerr in his revision of his work, which was a very ingenious one, and only required to be adapted to the incontrovertible circumstances of physical action.

After a few observations and illustrations on the same subject by Mr. W. A. CARTER, Associate—

Mr. H. R. NEWTON, Fellow, remarked that this discussion shewed them what a difficult subject they had to deal with, and how they were reduced to the state in which they were by legal enactment—he would not call it iniquitous—but at all events most aggravating in its effects. The object of any discussion, he thought, should be to consider in what way they could possibly give effect to the Act in what may have been the true sense intended by its framers. On the one hand, if the framers saw the severe tendency of their enactment, probably they imagined that it would be simple to remedy it after a little experience; and if, on the other, they did not foresee the difficulties, it is probably that the Act does not express their intentions in the main, or is misconstrued, as it is impossible to suppose that they, or the Legislature, intended to give a lapsing right of freehold over adjoining owner's property; or that an existing owner's (A.) only remedy was within a certain number of years to defend himself against B. by building, when he (A.) might be prevented in his turn by C. or D., and when other enactments as to the manner under which property is held by lease, or under trust, might also bar any action at all in defence of rights until it was useless, and after B. had acquired absolute rights. It was, however, too late in the evening to go minutely into that portion of the question, or into the intricate problem which Professor Kerr had propounded; but he thought, when that cage-like figure, either on paper or by model, was submitted to a jury, they would have great difficulty in understanding it, however clear it might be to the legal mind of the judge. Even at best it was only an elaborate compromise, and if it was a question of compromise, it ought to be settled on simpler grounds. He thought the best thing they could do was, after having been so long a time in this difficulty, to consider some practical amendment of the Act under which they suffered. They had got into greater difficulties than they were in before; and by every case that came before the Court, it was shewn into what depth of mire they had been dragged. The first point was to do something by which, say in twenty years, they might be brought out of all the present difficulties as to rights of light and adjoining owners, and for the present moment there was no reason why some small amendment of the Act would not effect a benefit. For instance, why not create a legal ability to give notice in the case of any building to be created by the authority or under the sanction or jurisdiction of the Metropolitan Board of Works, that whatever lights were created by that authority they should not override the rights of the adjoining owner. He repeated he apprehended the present Act did not intend to deprive any owner of his rights, but it was most clumsily put together, and now they had to get over the difficulty with regard to certain rights acquired since. Except, therefore, in the sense referred to, the passing of any amendments to the present Act would be a most intricate matter altogether, and he therefore thought it would be better to look forward to the future, so as to do away with the present Act, and obtain a sound, new, general measure, and until then suffer patiently what we were so unfortunately accustomed to.

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* Article "Windows," p. 751–761.

Mr. C. F. Hayward, Hon. Sec., would say a word upon the first point which they were called on to discuss, viz. the "evidence of architects on the obstruction of ancient lights," which would illustrate Mr. Ashpitel's remark, that the uncertainty of the law led individuals to fancy they possessed or had acquired certain rights not actually existing, thus leading to a great deal of litigation. As the discussion was not intended to refer to London alone, but to the whole country, he would mention a case connected with his own professional practise, in which, last autumn, two quarrelsome neighbours went to law on a point of light and air, which was absurd in itself, but which elicited a very clear statement from Chief Baron Pollock. The facts were these: On one side of a public road, about 21 feet, was an old two-storied house; on the opposite side was a garden wall, 7 feet high, the house belonging to which was some 200 or 300 feet off. This garden wall was pulled down, and rebuilt to the height of 8 feet 6 inches. Architect's evidence was brought to shew that the house was darkened by this extra foot or so of height in the garden wall, and other evidence to prove that a person could hardly see to read, except at the window, and that the housemaid could not see to clean the house as formerly. Professional evidence was thus found on the one hand to declare that the injury was great, from the loss of light and air, and this was carried by counsel so far that England was declared to be a country which would not be worth living in if the owner of a house on one side of a street was liable to have a wall built opposite him on the other side of the street; while on the other hand, architects' evidence was brought to prove that there was no material injury, and no appreciable diminution of light or air. This latter view was accepted by Chief Baron Pollock, who stated that as the law had been very strongly put on the one side, he would put it equally strong the reverse way, and said that England would hardly be worth living in if a person owning a piece of land on one side of a public highway was not able to make use of that land for building because his neighbour opposite owned a house and objected to any obstruction of his light and air. But here a neighbour went to law with his opposite neighbour because of a 7 feet garden wall. It was satisfactory to know that cases of this kind were too costly to be of frequent occurrence.*

Professor KERR, on being called upon to reply, said he had no need, especially at that late hour of the evening, to claim any right of reply; but if the meeting desired it, he would offer a few observations upon two or three points of importance which had been raised by the several speakers. First, as regarded the remark of Professor Donaldson, that he would require to devise some simpler diagram before he could satisfy a judge, and that of Mr. Newton to the same effect as to satisfying a jury, he must simply say that to satisfy a jury upon any question of the kind was a thing not to be expected; and even to satisfy a judge by a diagram could scarcely be expected, because neither jurymen nor judge, nor even the lawyers, however intelligent, could be asked to go so much into detail; but if architects could satisfy each other, both judges and juries would be satisfied. It was easy to say at hap-hazard, simplify the diagram; but there was, in his opinion, no necessity for simplifying it. If the diagram was as simple as the question itself, no more could be hoped for. That evening's discussion had proved how very far from simple the question was; and for his part he was very well pleased to be able to offer any diagram at all as a test of proof in so complex a matter, and the only argument he could entertain was, not whether it was easy to work, but whether it was correct. His friend, Professor Donaldson, had then entered largely into arguments upon the law. Now they all knew that mere law arguments at the hands of surveyors must be quite unavailing, and in this case especially it would be, in his opinion, vain for that meeting to attempt to determine any questions of law. [Mr. DONALDSON: I stated the law; but I argued only upon the equity of the law.] He (Professor Kerr) still thought it was in vain for them to give any decided opinion upon details of law. As architects, they were obviously unable to command respect upon merely legal ground; it was only by acting upon ground of their own that they might effect some good. He himself had avoided the legal question; he professed to be, not a lawyer, but a measurer of window lighting, and if he could accomplish accurate measurement he was making himself much more useful than if he were interfering with the law. Several gentlemen had argued as if the Prescription Act of William IV. were a new measure, which was a great mistake; for it merely reduced to the definite term of twenty years that indefinite term of possession which previously had been called time out of mind. It made no alteration in the principle of law—this had always been the same from remote antiquity. Even with the Romans this principle had been the law; indeed so closely was it then argued that a distinction was made between the rule of light for towns and that for the country; in fact, the principle in question had been the law of the civilised world from time out of reckoning, and from all he had seen and read about it he was afraid they would not be able now to alter it. As to the City of London rule, it might be sufficient to remark that it was only received as a matter of custom. [Mr. **Ashpitel** remarked that it utterly failed to hold good upon investigation.] That was very likely. He would next desire to point out to Professor Donaldson that all those arguments which he had based upon questions of special grievance on one side or on the other were ineffective in this way, that as every consideration of the kind was matter of equity, it was competent for counsel, and indeed for skilled witnesses, to introduce to the notice of the Court whatever might be deemed desirable in that way, according to the circumstances of the case. [Mr. **Donaldson** : Not against the positive law.] The positive law, as his friend called it, established no more than a sort of general principle to be applied by the courts of equity according to the circumstances of each particular case. They were at liberty to argue to any extent (for instance, architects did so in their affidavits) upon whatever circumstances might arise, and the judge would pay due attention to those arguments. Again, to return to the Prescription Act—as regarded the term of twenty years itself, it must not be forgotten that twenty years' possession of a thing was a very weighty argument in whatever case; even in matters of landed property twenty years' possession was held to create in a certain sense a freehold; and in this particular matter twenty years' undisturbed possession was practically a very long possession, and not a thing of yesterday, as some of his friends appeared to argue. Mr. Bell had made some observations which were at least pointed. That gentleman would have preferred that he had made his diagram to apply in some way inside the room rather than outside. He had no particular objection to this, but he could only draw the same half hemisphere (as a reflection) inside that he drew (as a thing reflected) outside, and the result would be precisely the same. But the fact was that Mr. Bell was there as the advocate of the old system of rule of thumb, and nothing more; and he would show the meeting the real difference between Mr. Bell's ideas and his own. It happened a short time ago that Mr. Bell and himself were engaged on the same case and on the same side. It was a case of a building of Mr. Bell's, and he of course had charge of its defence. The measurement system was applied by Mr. Ashpitel and himself with perfect success—a better case of defence there never was; but Mr. Bell persisted in referring to more "direct" evidence, such as setting up a tarpaulin and dropping it suddenly; he also insisted upon arguing about peculiar North lighting, the shade of coffee berries, and so forth, and what was the result? The judge, on Mr. Bell's own evidence, gave a decision against him. [Mr. **Bell** dissented: the decision was only an interim injunction, and the case was to go to a hearing.] He certainly was never more astonished in his life than when he read in the newspaper the decision of the Court in that case. There could not possibly be a clearer case by the test of admeasurement. He held in his hand the diagrams he had made, and as an illustration he might say that in the particular case of the window specially referred to by the judge, the light formerly possessed was actually (68 measures at 45 being the standard of necessity) not less than 211 measures, and the proposed abstraction 15½! And yet the Court felt obliged, on Mr. Bell's own evidence, to grant an interim injunction. All he could now say was that if the judge, instead of fixing his attention upon Mr. Bell's tarpaulin, had been allowed to pay more attention to the evidence of admeasurement, the case would have gone very differently.* [Mr. **Bell** : It will be all right yet.] He hoped it would; but on the whole he thought Mr. Bell was the last man who ought to cast disparagement upon admeasurement, and he might depend upon it, as regarded the case in question, he would have to fall back upon it in the end. To go now to another subject, he would say that a very great deal of the argument which had been used throughout the evening might be answered in one word—it all referred to exceptional cases, and he had clearly laid down the principle that exceptional cases could only be treated exceptionally. It occurred to him in the next place that Mr. Hesketh, a gentleman of great eminence in the profession, and of wide experience in cases of light, had used to him privately an argument which had not been brought forward that evening. So far as it went it seemed very plausible. Mr. Hesketh, admitting the measurement system as a principle, said there was one refinement, however, which had not been allowed for, insomuch that the light which entered from the front penetrated further into the room than the light which entered from the side, and therefore, said he, allowance must be made for this fact. But the answer was that anything of the kind would be only a needless refinement, even if it had any considerable effect upon results, which it would not. As time pressed, he must now ask leave to pass over a great deal of the minor incidents in the discussion, and turn attention to that important question, how to effect, not an alteration of the legal principle (for that, he thought, was beyond their province as architects), but an amendment of its practical administration. Here he had several specific propositions to submit. The first was, that all these cases of light were matter for practical men to adjudicate upon under the special circumstances of the occasion, and not mere abstract problems for lawyers to argue *à priori.* This was, in fact, one of the chief ideas stated originally in his own paper, and he thought it would be well to introduce a rule to operate in all these cases, viz., *Reference to a Surveyor, by order of the Court,* just as the law courts refer cases of disputed accounts to the Master or to an arbitrator. Another point to which attention might be turned was this—how far all these difficulties might be surmounted by admitting a principle of re-adjustment. For instance, if a neighbour had a window opening out upon another's property, and if because it was a small window he required a large amount of sky surface for sufficient lighting, why should he not be asked to enlarge the window and let less sky surface suffice? The Court would reply that it could not compel him so to re-adjust his light, because he might suffer damage in some other way. But, granting this, he would still urge the principle, and call it *Re-adjustment plus damages.* Thirdly, there was an idea which would provide an answer for a great deal of the complaint which had been made by various speakers. It was argued that they had no means of preventing these easements of light from being established, and that that was a weak point in the law. To meet this he would suggest the principle of *Reservation by Protest,* so that, whenever an easement of light was established over a neighbour's property, it should be competent for the neighbour to reserve all his rights by some notification to that effect. As regarded the French law, which Professor Donaldson had laid before them, and which was new to him (Professor Kerr), he was sorry to say he did not see how that would help them in England, because it did not touch (as he understood its application) the real question of light, but merely that of overlooking another's land. In conclusion, he was much gratified to find that his paper had been the means of raising so much discussion upon so important a matter. As for himself, he would repeat that he professed nothing more than the measurement of the light, and he thought it would be better if other gentlemen present, instead of talking law, would leave law to the lawyers and turn their attention, as surveyors, to surveyors' proofs, whether by his own system or any other; for he must be allowed to maintain that no one ought to expect his opinion as a scientific expert to be attended to, unless he was able to produce scientific reasons upon which that opinion was founded.

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* RAND v. COOK (*Extracts from Newspaper Reports*).—The Chief Baron in summing up said: "* * * It was not the law that a man who had enjoyed a certain amount of light should go on enjoying that amount of light for ever. Society was so constituted that there must be give and take always going on. Some people no doubt wished to make it all take and no give. * * * Suppose the owner of property on one side of a road build a cottage, was the owner of property on the other side to be stopped from building a similar cottage? To say that a man who lived on one side of a road, was able to forbid his neighbour on the opposite side to build a wall, was monstrous, and in all his professional experience, extending over half a century, he had never known such an action brought. * * *

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* I have been since reminded that the evidence of Mr. Ashpitel and myself, as drawn by ourselves, was mutilated by the omission of the results of our admeasurement, in pursuance of some maxim of legal expediency. This in my opinion explains all.
R. K.

Mr. DONALDSON remarked that his friend Mr. Ashpitel had said the question depended upon the practice of architects rather than upon the law; but the practice of architects must be guided by law; therefore he had enquired into what the law was, and his aim had been to lay before the meeting the present state of the law as ascertained from the cases recently given, and the last case, by far the most important, summed up the different points of the law in a very comprehensive manner. He wished to shew what the law did or did not allow, in order that they might design their buildings accordingly, and not, through inadvertence, lead their clients into error, by supposing that they could establish a right which the law did not recognize.

Mr. ASHPITEL said his friend misunderstood him. His wish was, not that they should go into Court to test the law, but that they should be able to go and state certain facts, measurements and proportions, relative to which he thought Professor Kerr's plan was a good one.

Mr. DONALDSON added, there was one point in particular—that was, as to extent to which a right had been used. But there were two sorts of rights, the rights of the tenant and the rights of the owner. It might not be necessary for the purposes of the tenant to avail himself to the fullest extent of the easement belonging to the premises he occupied; but if the owner proved a diminution of light, which, though it did not affect the immediate tenant, reduced the value of the property, he had a right to stop that diminution of the value of his property. This was laid down absolutely in the cases he had cited.

Mr. ASHPITEL said he had stated that when the building he referred to was used as a malt house there was light enough for the purposes of malting, and no more; but when the character of the building was altered, and the owner wanted more light, the law stepped in and said: "Your prescriptive right has always been so much light as will suffice for the manufacture of malt, and you have no right to demand as much light as would be required for any other business, say for watch-making." Of course these rights must have been held without challenge for twenty years, or if suspended for any cause during this time, such non-user or suspension must have been for less than a year and a day.

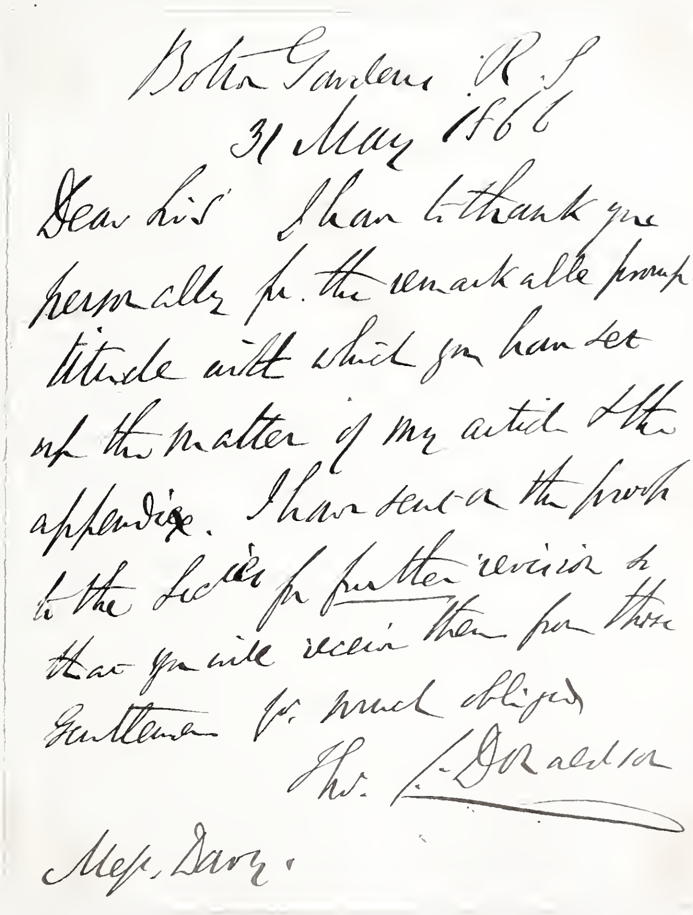
The Chairman, Mr. J. SPENCER-BELL, Fellow, said the result of the discussion appeared to him to shew that the whole question was in great uncertainty as to the law, the equity, and the facts, and he was not able himself to admit the equity of the law that a right should be inherent in certain properties by hap-hazard; and that it was by mere accident that a wide street ever had two sides to it, because, according to the way in which the law had been laid down, if a house was built 10 feet high on one side, and another house was built on the other side, 40 feet high, it was impossible to raise the 10 feet house after the lapse of twenty years. It was a mere accident whether after twenty years a man had a right to use his own property, and if that were the law he could not see the equity of the thing. He dissented from Mr. Ashpitel that law and equity were synonymous terms.

Mr. ASHPITEL—But they ought to be.

The Meeting then adjourned.

In a paper which Mr. W. WHITE, Fellow, intended to have read at the closing meeting, held on Monday, June 18th,—but which was postponed on account of the extraordinary length of the previous business of the meeting,—the author thought he would be able conclusively to show that Professor Kerr had not sufficiently recognized the true bearings and importance of reflected light. Mr. White finds practically, and professes to prove, that the increased nearness or increased height of an obstruction, with only the same amount of obscuration of sky surface, is a practical result such as materially to modify decisions based upon the measurement of sky surface alone; and hence he concludes, that whether judges and juries will recognize the element of reflection or not, it is but right that the state of the case should at the least be represented to them. He points out that this is quite irrespective of the question of the accidental colour of the obstruction, though this of course might, as the Professor observes, have sometimes a material influence on a given result, if its influence were allowable.

Mr. White corroborates his views by reference to several obvious facts, and proposes to take up the subject on some future opportunity.



Bolton Gardens R.S.
31 May 1866

Dear Sirs I have to thank you personally for the remarkable promptitude with which you have set up the matter of my article & the appendices. I have sent on the proofs to the Secties for further revision & then you will receive them from those Gentlemen Yrs much obliged

Thos. L. Donaldson

Messrs. Day.

SOME REMARKS ON THE MEDIÆVAL ANTIQUITIES OF THE COUNTY OF DURHAM.

By J. Tavenor Perry, Associate.

Read at the Ordinary General Meeting of the Royal Institute of British Architects, June 4th, 1866.

Mr. President and Gentlemen,

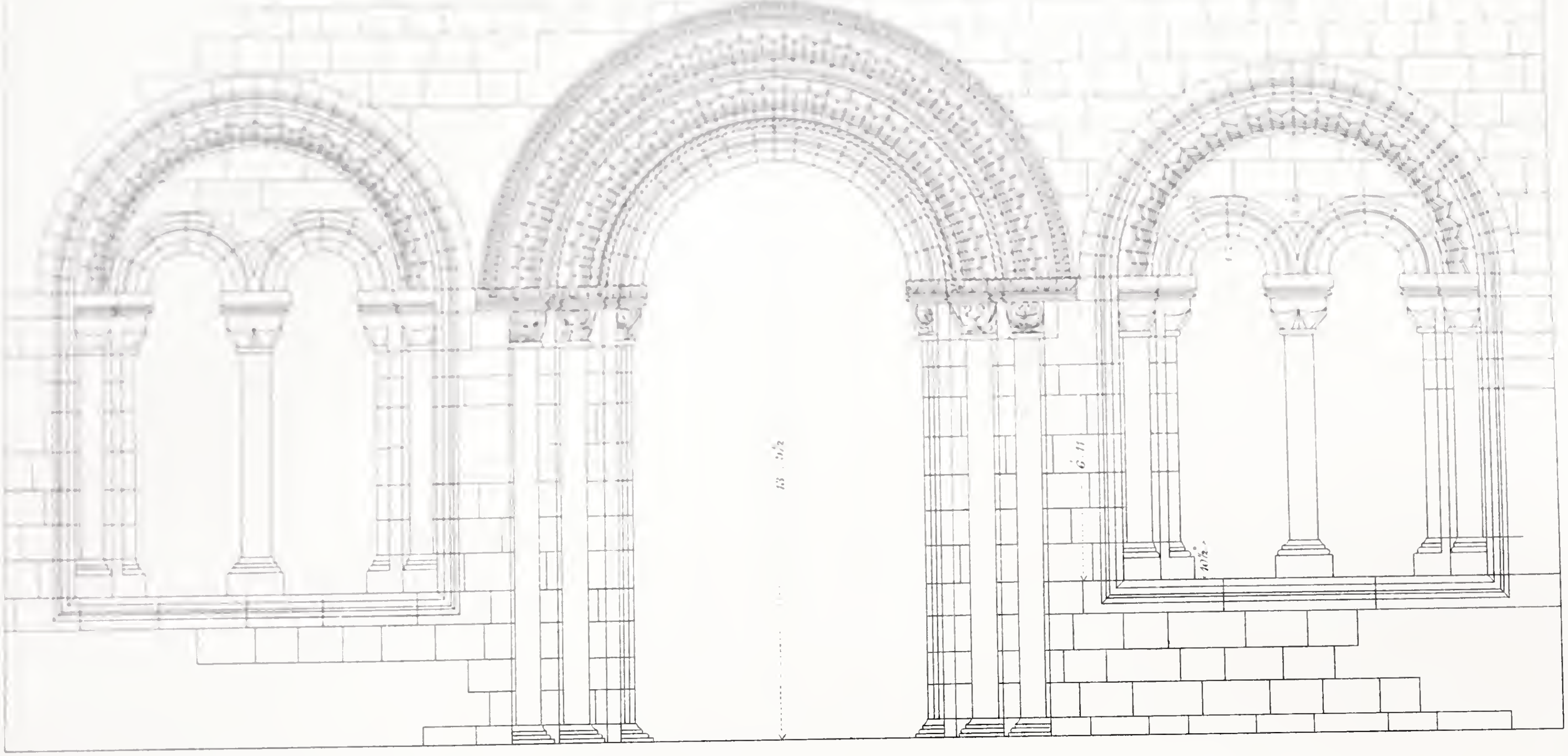
In accordance with the request of the Secretaries, I have the honour to read before you this evening a paper on the Mediæval Antiquities of the County Palatine of Durham; more particularly on those I visited or sketched last year, while holding the Pugin Travelling Studentship. I felt, at first, somewhat unwilling to do so, as the request was unexpected; for I had no idea while preparing the drawings, and making the few notes I have, that they would be required for any other purpose than my own instruction. Anxious, however, to make my work as complete as possible, I have endeavoured to comply with their wishes, and I must therefore trust to your kindness to receive such accounts as I can give, with the consideration due rather to a student than a member of this Institute.

The short time I had at my disposal—about nine weeks—was almost entirely spent in measuring the most interesting remains in the county least known, and hitherto unillustrated in this manner; and, although I was necessarily compelled to leave many examples untouched, I succeeded in getting drawings of the most beautiful, or most characteristic, of the various building periods of the diocese. The drawings I have arranged, as far as I could, in chronological order, and I propose to treat the subject historically, giving short notices of the various bishops, so far as they are connected with the periods and buildings under consideration.

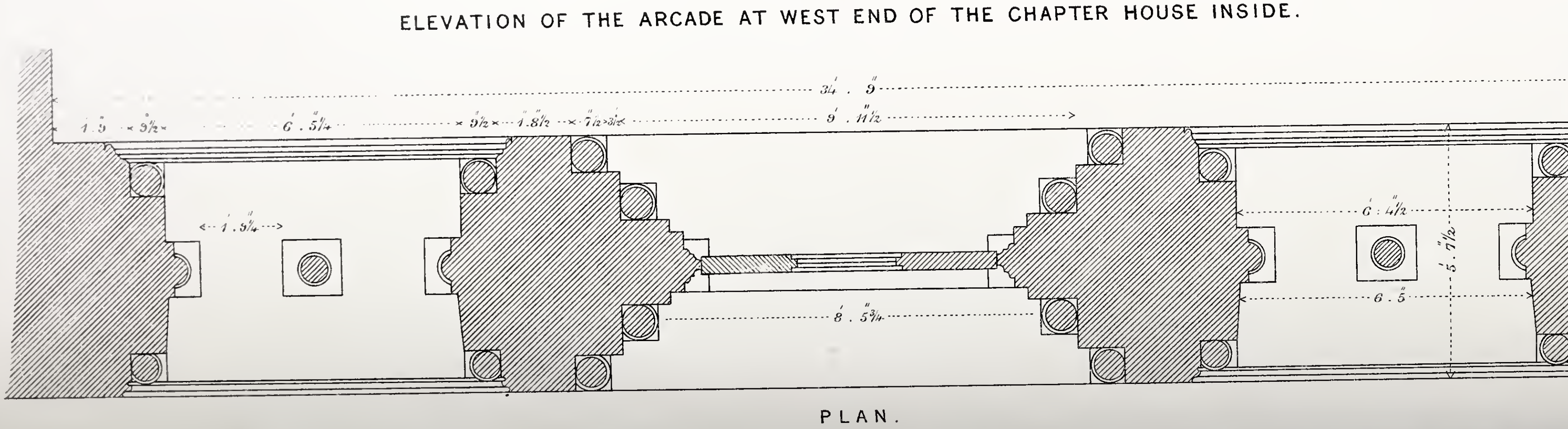
The earlier history of the diocese, and its connection with S. Cuthbert, are too well known, and are also too remote, to require repetition now; but the existence of the church of Chester-le-Street, on the site of one of S. Cuthbert's resting-places, as well as the remains in the towers of Norton, Billingham, Monkwearmouth, &c., and the relics preserved in the Chapter Library at Durham, are interesting memorials of pre-Norman times. Most of the ecclesiastical buildings of the county, whether they were raised on a Saxon foundation or not, show that the time immediately following the Conquest was the great building age of the diocese; and from the cathedral itself, down to the smaller parish churches, nearly all have considerable remains of the work of this epoch.

The unruly state of the people after their first conquest by the Normans, as shown in 1080 by their murder at Gateshead of Bishop Walcher, gave cause to William to treat the province with great severity, so that in the frequent devastations to which it was subjected, the various edifices raised by the Saxons became ruins, and their complete rebuilding was thus necessitated. The building which would naturally receive the first attention from such a king was the castle, and the present one was founded by his direction in a magnificent position overlooking the cathedral and the river. In all probability it was raised on the site of an earlier one which had been destroyed in the previous troubles. Little of this castle of William's, however, remains, unless it be the crypt, as it is now called, of the castle chapel. This is sometimes ascribed to Bishop Carileph (1080-1089), the second Norman bishop of the diocese, under whose care the works had been carried on; and the early profile of the bases and rude carving of the capitals quite accord with this date. Such of it as is left is shown in the drawing, and consists of three aisles of nearly equal width, of which four bays remain, vaulted with a plain Roman vault. At the east end, where the wall has not been cut away for a modern staircase, are remains of two altars; and a considerable part of the floor is of the same date. Beside this, unless it be in the foundations, nothing else in the castle appears to belong to this period; but the same bishop commenced to rebuild the cathedral, and the plan, as it now is, differs but little from his design. Soon after his consecration he obtained a bull, giving him power to eject the secular clergy, who had until that time lived in the convent, and to introduce some monks of the Benedictine order. For some years, however, he was unable to carry out his design of rebuilding the church, being forced to absent himself from his diocese in consequence of his having incurred the king's displeasure, by taking a part in the unfortunate quarrels between William Rufus and his brother Robert. In 1093, the destruction of the Saxon cathedral, which had been scarcely built a hundred years, was commenced, and the new church begun according to his designs. As he died, however, in 1095, little was done under his direction beyond raising the walls of the choir a few feet above the ground. But his successor, Ralph Flambard (1099-1128), was well able to carry into effect the designs of Carileph. Originally a village priest in Bayeux, he had risen and flourished with the conquerors, and had succeeded by fraud or favour in obtaining some of the highest offices in the country. He purchased the bishopric of Durham for a thousand pounds, and took possession of his see in 1099. He had already been occupied in building; for at Christchurch, of which he was the dean, he had completed the nave and transepts, and was meditating the addition of a new choir when he removed to Durham. The great similarity between these two churches has been already pointed out in a paper read here by Mr. Ferrey two or three sessions ago, in which he gives a full account of the bishop's life and works. Under his superintendence the walls of the cathedral were carried up to the springing of the groining, and the lower stages of the western towers built. In his episcopate, Finchale was added to the priory, and the foundation and dedication of the hospital of St. Egidius, at Kepyer, are due to him. The beautiful bridge of two arches, spanning the river on the north of the cathedral from Framwellgate to the castle, was also one of his works, although it has at a later date undergone considerable alterations. The next bishop, Galfrid Rufus (1133-40), was the builder of the Chapter House, of which unhappily but little remains to the present time. When completed, it formed a vaulted chamber, eighty feet long by thirty-five wide, having an apse at the east end. The west end—which is all that is left of this beautiful work—consists of a doorway from the cloisters, under a richly moulded arch of three orders, between windows of two lights on either side. Such of the carving as still remains untouched is exceedingly curious and elegant in design, and presents good examples of the ornament so peculiarly characteristic of this style. The walls were decorated with an interlacing arcade, similar to that round the aisles of the cathedral, and the vaulting ribs of the east end were carried on enormous corbels representing atlantes. Of these, only three remain, in a very dilapidated condition, preserved, with many other relics of former times, in the chapter library on the west of the cloisters. Many bishops from Flambard downwards were buried here, and the floor was covered with memorial brasses; but in 1799, owing to the room not being considered comfortable enough for chapter meetings, the greater part of it was deliberately destroyed, the key-stone of the vault was knocked out, and the whole mass of the stone roof fell in upon the monuments beneath, without a single effort being made to rescue even so much as the bishop's chair from the general ruin. In Carter's drawings of Durham, the chapter house is illustrated, and there are fortunately remaining in the library some sketches of his, showing the state of the building before its destruction. The only part allowed to stand, was the west end I have described, shown on the measured drawing, which affords a good specimen of the character of the work we have lost. To Rufus succeeded two bishops, who held the see but for short periods, and contributed but little towards the advancement of the works already in progress. In 1154, Hugh Pudsey, a nephew of King Stephen's, obtained the bishopric at the age of twenty-five years; and then

DURHAM CATHEDRAL



ELEVATION OF THE ARCADE AT WEST END OF THE CHAPTER HOUSE INSIDE.

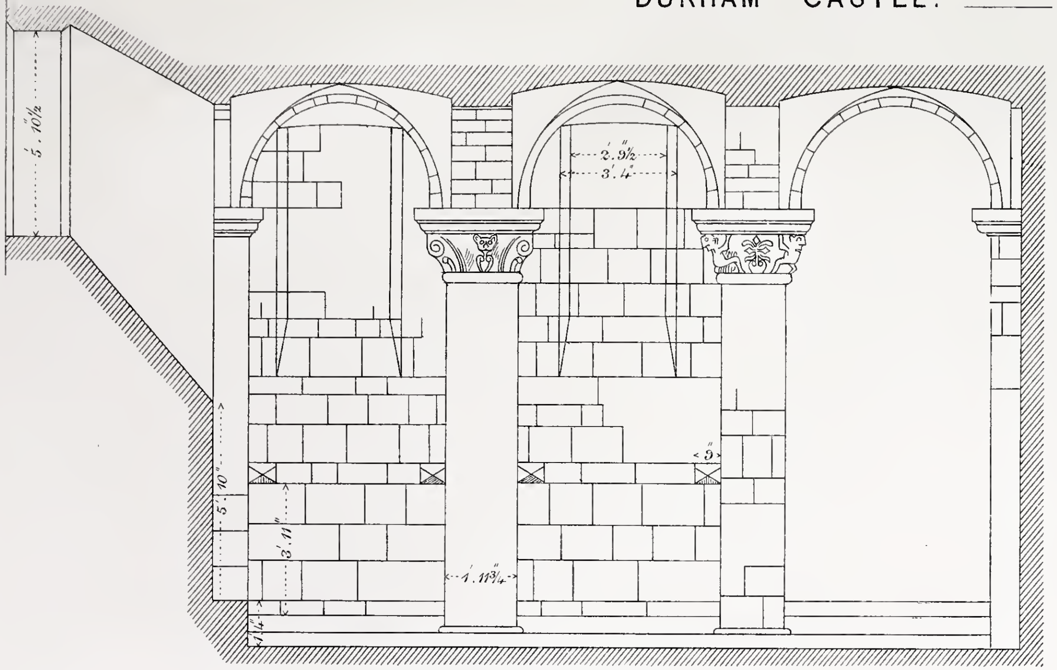


PLAN.

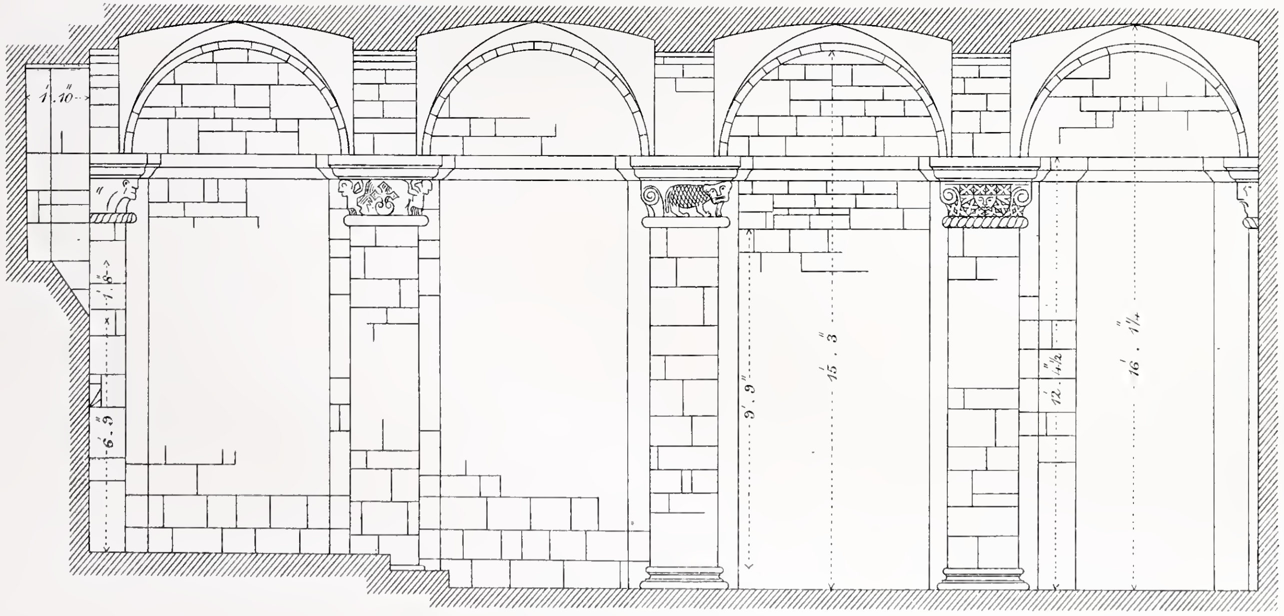
J. Tavenor Perry, Del.

Lithogd for the R.I.B.A. by Kell Bros London E.C.

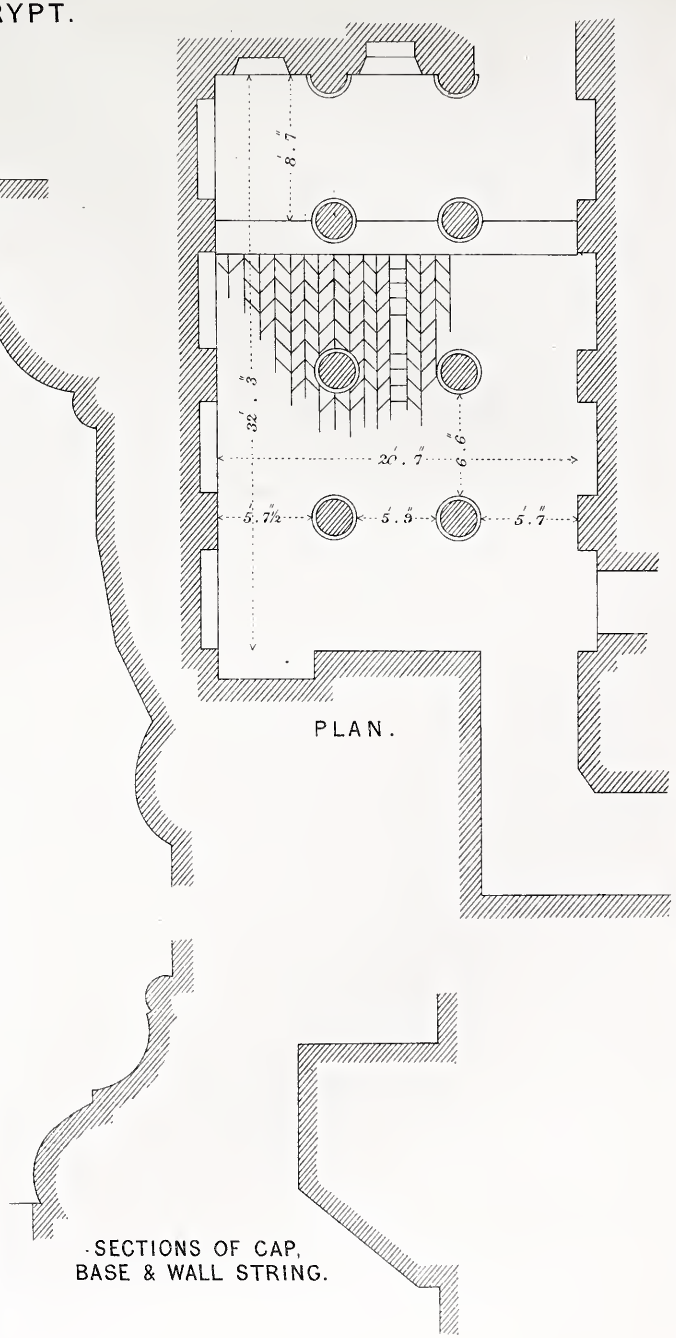
DURHAM CASTLE. —— NORMAN CRYPT.



SECTION LOOKING EAST.



SECTION LOOKING SOUTH.



PLAN.

SECTIONS OF CAP,
BASE & WALL STRING.

J. Tavenor Perry, Del.

Lithog^d for the R.I.B.A. by Kell Bro^s London E.C.

commenced the new and most important era in the architectural history of the county. During his long episcopate of forty-two years, not only was the cathedral considerably added to, but large and beautiful works were carried on throughout the diocese. Among his additions to the cathedral were the building of the Galilee on the west front, the north and south doors,—on the former of which is the glorious sanctuary knocker of bronze,—and possibly the vaulting of the nave, which is decorated with ornament of the same character as the arcades of the Galilee. He made, too, considerable additions to the castle, of which the great door and the Norman Gallery appear to be remains. The churches founded or rebuilt during his episcopate were very numerous, and show well the gradual change that was going on in the style of his time, which embraced nearly the whole of the first period of transition.

Perhaps the church of St. Lawrence, Pittington, contains more of the earlier period of Pudsey's work than any other in the county, if the cathedral be excepted. As it now stands, it consists of a nave. of six bays, with aisles, a chancel, and a western tower; but from the shortness of the chancel and from other alterations, it appears that the nave was lengthened, at the last restoration, by the addition of one bay taken from the chancel. The most ancient part of the church visible is the superstructure of the nave arcades, pierced by clerestory windows opening into the north and south aisles. Pittington is sometimes said to be the mother church of the diocese, and this part may well belong to a date anterior to any of the remains existing in the cathedral; but the arcades below were inserted at different and subsequent times. The arcade on the south side was built in the middle of the thirteenth century, and has plain chamfered arches on cylindrical piers. The arcade on the north side, however, is by far the most interesting part, and is that referred to as clearly belonging to the middle of the twelfth century. It has four arches, each of two orders, the outer one enriched with a zigzag ornament, varied by having the spaces between the points sometimes cut out and sometimes left in solid. The piers below have the ordinary scolloped capitals of different designs, but the shafts are ornamented in a manner almost unique, the church of Orford, in Suffolk, being the only other example I know of. Two of these have a bold roll wound spirally round them, projecting more than four inches, and not incised as is usually the case; while the orders are octagonal, with a large roll at the angles. A master mason of Pudsey's, who held land in the neighbourhood, while the works at Sherburn Hospital and Pittington were progressing, was buried here, and a slab of marble in the churchyard is pointed out to mark his grave. Doubtless there was considerably more work of this date in the church, for now round the walls are many beautiful remains of carved capitals, &c., which have been removed to make way for restorations. On the north wall also, under the clerestory, are some pieces of coloured decoration almost effaced; the part shewn on the drawing is said to be part of a picture of the Consecration of S. Cuthbert. The upper part of the tower, at the west end, is, apparently, of the same date as the north arcade, and the belfry contains a very good bell carriage of an unusual design.

Large portions of the church of All Saints, Lanchester, are due to Pudsey, although the earliest work may have been done in the time of his predecessor, Flambard. It was built on the site of one of the most important Roman stations in the island, and on the south side of the hill to the west are very considerable remains of a camp. As this has formed for many hundred years past a quarry of ready-hewn stone for whoever wanted to build, it is not to be wondered at that many stones covered with Roman work are to be seen in the walling of the church itself. No signs of Saxon work are, however, to be traced, and there is nothing to prove that there was a church here before the Conquest, unless it be the name. The earliest work we find is the beautiful chancel arch, shewn in the drawings, and an arch of the same character now over a tomb in the south aisle. This latter was originally the arch of the porch, but was removed, in one of the alterations of the fourteenth century, to its present position, while on the old Norman jambs of the porch a high pointed arch was raised, and the Norman hood mould was rejointed and made to fit the inner arch of the porch: thus the whole of the door remains, but in three different parts of the church. About 1190 very considerable alterations went on: the nave was removed and entirely rebuilt by Pudsey, with arcades of pointed arches, enriched with the usual dentil ornament so characteristic of his time. The chancel was added a little after his death, and has a well-proportioned triplet at its east end.

It was in the port of Hartlepool, afterwards the great port of the Palatinate, that Pudsey prepared his fleet to sail for the Crusades. From this undertaking, however, he was dissuaded by Richard the First, who was not a little jealous of the splendour of his arrangements, and he was induced, by additional grants of power to remain at home and transfer his retinue to the service of the King. This is one of the first events recorded of the place, where, afterwards, one of the finest churches we owe to Pudsey was erected. From the earliest times Hartlepool had been the seat of important religious houses, a convent, of which St. Hilda was the second abbess, having been founded here in the middle of the seventh century. The present church, dedicated to St. Hilda's memory, belonged to the Black Friars, but all remains of the convent have perished. The church itself, though it has suffered severely—tradition says, through its connection with the Bruces, who built the chancel—is still one of the finest in the south of the diocese, and for its fine proportions and simple arrangements must hold a high position in the architecture of the country. As it now stands, it consists of a nave of six bays, with north and south aisles, portions of two bays of a chancel, also with aisles, and a fine western tower, with chapels between the buttresses. The greater part of the chancel was pulled down during the last century; but it is said to have been, when perfect, of the same length as the nave. As at Lanchester, there had been here, previously, a church of earlier foundation, as shown by the door still remaining in the wall of the south aisle, highly enriched with zigzag ornament; but, with this single exception, nothing remains of a date anterior to 1185. In this year, or thereabouts, the nave and chancel were erected, and form one of the most successful works of the period. The nave arcades have a fine series of arches, on piers of very varied designs, formed sometimes of clustered shafts, with moulded capitals and circular abaci. The aisles are crossed with stone arches from each pier to the wall; those on the north side springing from a lower level than the top of the capitals. The clerestory consists of single lancets in each bay, united outside by a very rich wall arcade. The roof was designed to be of wood, the principals being carried on wall shafts rising from the piers below; but these, and the roof itself, have in many cases disappeared. The present roof was erected during the last century, when also the east end was disfigured with a window of most horrible design. The chancel, though more ornamental in the details, has the same general arrangement as the nave, and is separated from it by a gloriously moulded arch of most noble proportions. One peculiarity of this arch consists in its having a small cap to one of the shafts in each pier, a little below the springing, to receive the ends of the rood-beam.

The tower at the west end of the church was erected some forty years later than the rest of the work, in the pure first Pointed style, and is very peculiar for the enormous projection of its buttresses and the buildings between them. It has long formed a puzzle for archæologists; and the object of the various alterations it underwent while building, is by no means fairly accounted for yet. By some it is supposed to have been originally intended for a central tower, and this appears to be by far the most sensible theory, since the great piers of clustered shafts show in the angles both inside and out; but the failure of the foundation, or the want of sufficient funds, prevented the extension of the nave westward. The plan having been abandoned after the tower had been built for a cross church, the great buttresses were required to strengthen a tower vaulted at so great a height, without transepts or nave against it to give it support. On the south, between the buttresses, is a small chapel, entered through a shoulder arch in a wall which has evidently been the filling in of a larger arch of the same date. On the west front, and the side against the church, however, the great arches of the lower chamber of the tower were not filled in until the fifteenth century. Whether or not there was ever a large western porch and parvise over it is impossible to say, although of the former there are some indications as well as entrances on the north and south sides; but the buttresses, at the height of a few feet from the ground, bear no marks to show that there have ever been walls or roofs abutting against them. The lower chamber is groined at a height of thirty-five feet above the ground, and has a large hole left in the filling in, for lifting the bells through into the belfry. Many of the upper windows were walled up immediately after the completion of the tower, with smaller windows left in the new work, a proceeding which, as it threw much greater weight on the foundations, did not at all tend to strengthen the work. The stone employed in its construction is the magnesian limestone found in the neighbourhood. All is now in a most ruinous condition, the tower considerably out of the upright, and the windows, where not altogether stopped up, fitted with common sashes: while inside dirt, and pews in their most vicious forms, reign supreme; and within the memory of many still resident in Hartlepool the north chancel aisle was used as a powder magazine.

One year before the death of Pudsey, his son Henry founded the priory church of S. Godrick at Finchale. Complete drawings of this beautiful work were, however, exhibited here a few weeks since, and I will not trouble you with any account of the buildings.

Another of the churches attributed to the zeal of Bishop Pudsey is that of S. Cuthbert, Darlington. That Pudsey was its architect appears, however, scarcely possible, as the general style is much more advanced than the rest of his work; and it could scarcely have been built before the year 1200. But there are many portions of the work distinctly of the same character, as much of the latter work in St. Hilda's, and other transitional churches; and it would appear that, although in Pudsey's time nothing more was done than the commencement of the foundations, much of the stone he had provided, and which had been partially worked and was used up after his death, when the building was proceeded with by his successors.

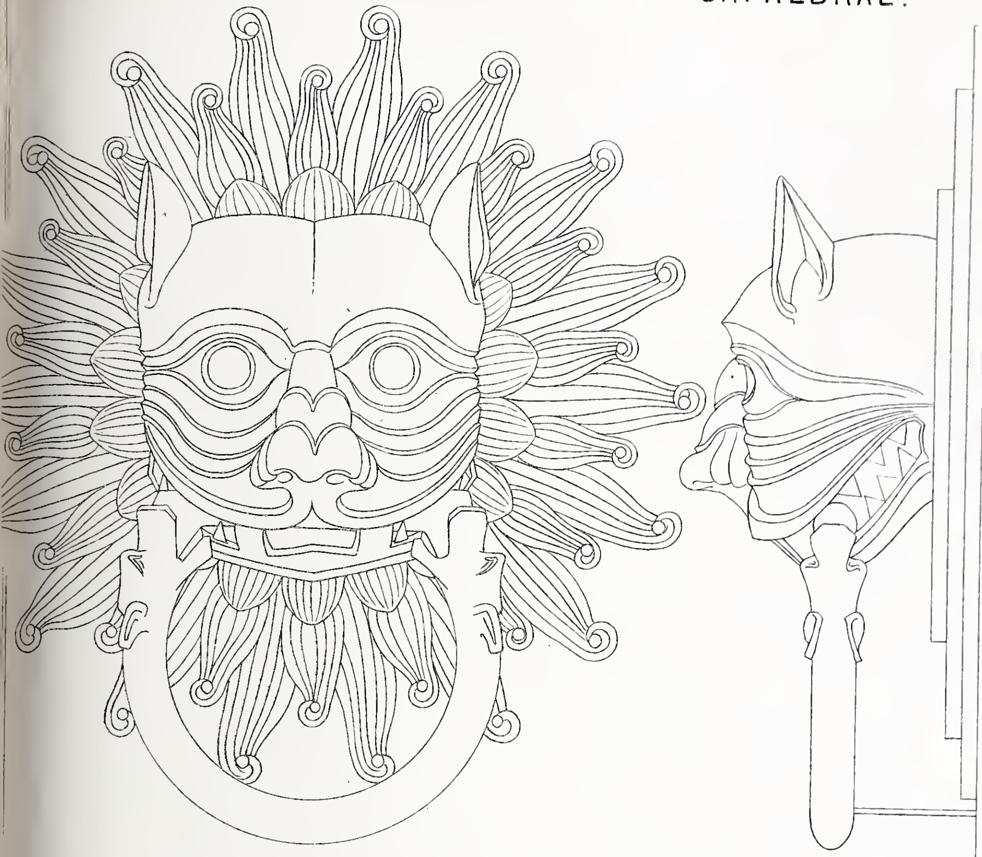
But public buildings and churches are not the only memorials of this bishop's life and rule; for the chapter library contains some most splendid manuscripts written by his orders, and presented by him to the convent. Among these is a work of four volumes, still in its original binding of stamped leather, known as "Pudsey's Bible," containing many pages of the richest illumination. The one shewn on the drawing is exceedingly interesting, as the arcaded work surrounding a page from the Eusebian canons represents the wall arcading of the cathedral, and since the manuscript was written within the convent it is more than probable that the original colours were imitated as well as the form. Another manuscript which came into the library about the same time, although it appears to be of a slightly earlier date, is a treatise by Berengarius on the Apocalypse, containing a few most choice specimens of illumination. Both for softness of colour, and fine drawing, this is rarely surpassed: the copy I have made of the initial letter to the volume, will give you some idea of the beauty and peculiar character of the rest.

Pudsey died in 1195, and his immediate successors were too much engaged in quarrels with King John to attend sufficiently to the affairs of their diocese. But in 1227, Richard Poor was translated to Durham from Salisbury, where he had already been seven years at work on the new cathedral. He pulled down the apse at the east end, which had become very dangerous from its ruined condition, and commenced the chapel of the nine altars, in 1235, in the perfect first Pointed style. It was in this episcopate that the tower of Hartlepool and the greater part of Darlington were completed; while throughout the diocese, there were many churches and buildings erected under his influence, either during his life, or immediately after his death; among which may be mentioned SS. Mary and Cuthbert, Chester-le-Street; S. Mary Magdalen, Medomsley; S. Nicholas, Boldon; S. Cuthbert, Billingham; and others. S. Cuthbert, Billingham, had been founded many years before this time, and contains, as well as the church of the adjoining parish of Norton, very considerable remains of pre-Norman work. The belfry stage has windows of two lights, divided by a plain baluster shaft and a star-shaped opening pierced in the head. The nave and chancel were, however, built in the beginning of the thirteenth century, and the arcade on the south side presents some rather unusual features. The shafts are clustered, but the abaci are invariably square, although the capitals are not carved. The font, too, is worth attention, as the shaft on which it stands swells slightly above and below the centre band, but it has suffered considerably from re-tooling in a recent alteration. S. Nicholas, Boldon, a small church consisting of a nave, aisles, chancel, south porch, and western tower and spire, is almost entirely of this period. It was altered, shortly after its building, by extending the aisles westward, so as to enclose the north and south sides of the tower, which, before, was only connected with the church on its east side. The upper stage of the tower, however, and the spire remain intact, and in spite of stunted proportions necessitated by its exposed situation the general appearance is very good. The crosses at the gable ends of the nave and chancel are among the best designed in the county, and belong to the same period as the rest of the church. The porch and bells are of a later date; the former is covered by a stone roof, supported on stone ribs, and belongs to the fifteenth century; and the latter, to the sixteenth. Much of the Church of S. Michael, Houghton-le-Spring, is of this date, although it contains examples of nearly every period of mediæval art. The earliest remaining portion is a tympanum to a small north door in the chancel, built into a wall of the thirteenth century, and seemingly of Saxon work, and curiously carved all over with scaly monsters entwined. The transepts contain some good early windows of two lights, with quartre-foil over, one of which is given in the drawings, and the nave has some of the best second Pointed windows in the diocese.

S. Mary Magdalen, Medomsley—a chapelry of the mother church of Lanchester—is built on the hills overlooking the Derwent, in a most bleak and unsheltered situation. Accordingly we find it suited to its position, with roofs of low pitch, no windows—except modern and unnecessary ones—in the whole length of its north wall, and only a small bell-cot on its west gable. It is generally complete in its style, although there appear to be indications of Norman work, due, however, possibly, to the rudeness of the design. Such mouldings as there are in the chancel, shew great taste and refinement; but the awkwardness of the shafts between the lancet windows, supporting nothing but the hoodmoulds of the triplet, indicates either some change in the design before its completion, or some later alteration of the work. The church now consists of a nave and chancel of equal width, and without aisles, divided at about one-third their length from the east by a well moulded chancel arch carried on corbels. All is in a very dilapidated condition, the one attempt at restoration having been the conversion of the piscina into a font!

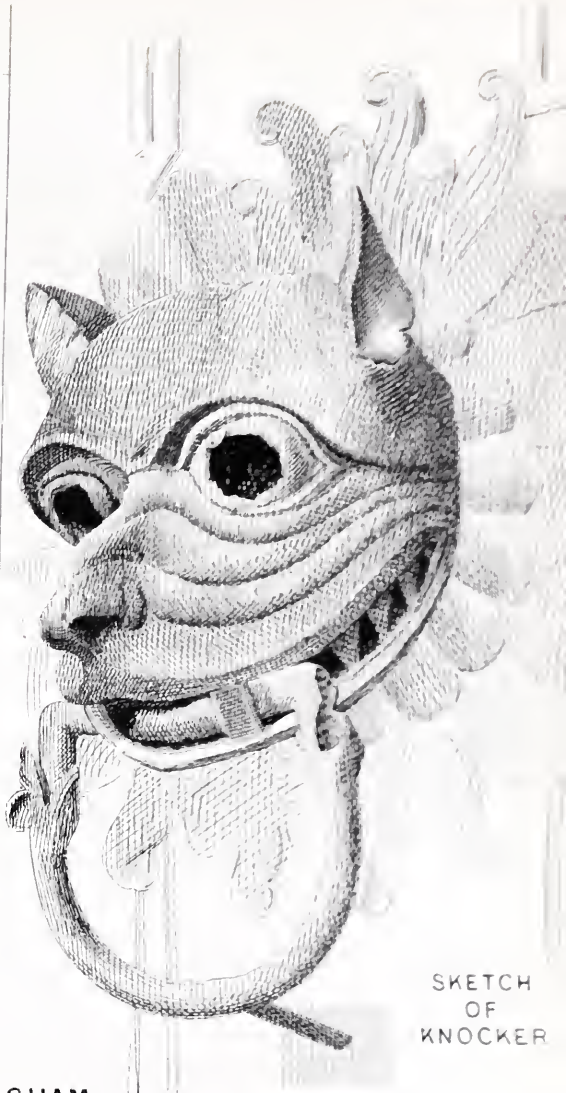
The Church of Holy Cross, Ryton, is another of the buildings of this period. The village is most charmingly situated, about seven miles west of Newcastle, on the steep south bank of the Tyne, which is thickly covered with wood almost from the river's edge. The church has a nave with north and south aisles, chancel, south porch, and western tower and spire, and is mainly of first Pointed work, the chief exceptions being the upper parts of the nave, and several windows of the fifteenth century. The chancel has some well-proportioned lancets and buttresses between, boldly chamfered and stopped with curiously carved heads. The interior is now sadly mutilated, and from the plaster casts and wood carving of doubtful propriety with which it is adorned, it appears to have formed for some time

DURHAM CATHEDRAL.



FRONT & SIDE ELEVATIONS OF SANCTUARY KNOCKER ON THE NORTH DOOR.

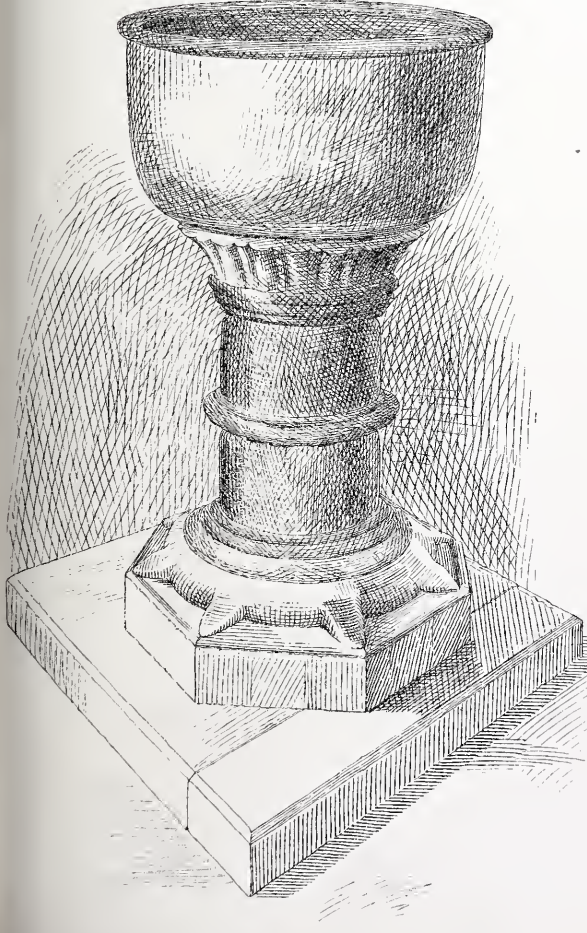
Scale. Two Inches to One Foot.



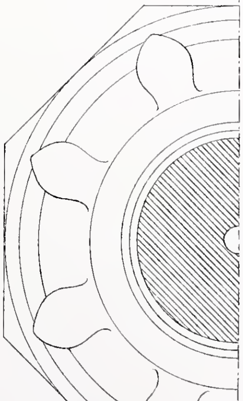
SKETCH OF KNOCKER

S CUTHBERT. BILLINGHAM.

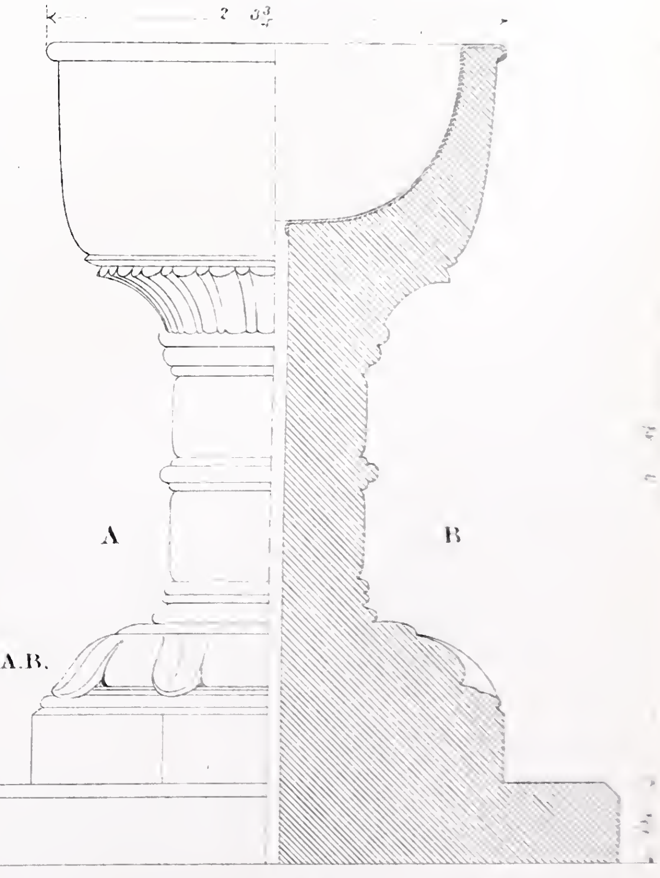
DETAILS OF FONT.



FONT FROM THE SOUTH EAST.



HALF PLAN AT A.B.



HALF ELEVATION & HALF SECTION.

past a sort of museum. The most interesting part, however, is the spire—108 feet high—which still retains its original timber framing, but little interfered with by modern additions, and forming one of the best preserved pieces of mediæval carpentry existing in the diocese.

Another of this series of churches is S. Edmund, Sedgefield, which contains some very choice examples of this style in the arcades of its nave, although the greater part of the building is of a slightly subsequent date. The plan will show its present arrangement, and the details will afford some idea of the general superiority of this work to that found generally in the diocese: in delicacy of carving and richness of design it can only be compared to some of the best to be found in the Chapel of the Nine Altars. The clustering of the shafts and the arrangement of the bands are particularly noticeable.

The memory of the immediate successors of Bishop Poor is not particularly connected with any building operations, except that of Bishop Farnham (1241-49), who is said to have erected the lower part of the lantern at the crossing of the cathedral. But in 1283 Anthony Bec, secretary to King Edward I., was appointed to the See, and did more, perhaps, for his diocese in building and endowment than did any of his predecessors, with the single exception of Pudsey. His wealth and power were enormous, and he held among other honours the titles of King of Man and Patriarch of Jerusalem. The Church of All Saints, Lanchester, was made collegiate by him, and underwent some curious alterations to fit it for its new requirements. The chancel not being of sufficient width to receive the necessary stalls, but yet having been too well and recently built to be destroyed, two recesses, of the depth and length required, were sunk, the one in the north and the other in the south wall, and were boldly arched over below the eaves, so that the roof had not to be disturbed. Several new windows were also added at the east end, and that part of the church completed as we now find it. At the same time a new vestry was built on the north side, with a most beautifully carved door, trefoil headed towards the chancel, the tympanum of which has a figure of Our Lord in Session. At the north and south ends of the altar are series of heads projecting from the wall, as at Medomsley, for carrying lights.

The Collegiate Church of S. Andrew, Auckland, is another of the works attributed to Bishop Bec. It is cruciform, of noble proportions, having a lofty tower on its west front, and a porch and parvise on the south. For size it takes the first position in the county, being 170 feet long; but for decoration it is not so remarkable, depending as it does, for general effect, more on the beauty of its proportions and size of its parts than on the richness or delicacy of its details. The original windows having, in most instances, been found unsuitable for the requirements of the church, were filled in, and two light windows of almost the same character have been curiously inserted by their sides. Throughout the building are remains of several piscinas, aumbries, sedilia, &c., and in the chancel are some stalls of good Perpendicular work, similar to those at Darlington. The porch and parvise are peculiar, the former being vaulted and having the cross ribs semicircular, while the ogives are segmental. The staircase to the parvise is on the south side of the porch in the angle next the church, from which it is entered. On the north side, next the door, is a niche for the stoup, with a plain circular head, and there are provisions on each side to receive the wooden seats. Of Kepyer Hospital little now remains: the entrance gateway, however, which would appear to have been built about this time or a little later, has been preserved, having an archway groined in two chambers, separated by an inner arch, with a room above.

Bishop Bec died in 1311, and but little was done for some years afterwards to continue his works, for the Scotch wars rendered the diocese scarcely habitable, and the wealth of S. Cuthbert was expended in the defence rather than in the extension of his patrimony. Bishop Hatfield (1345-81), however, found time and opportunity to carry out considerable additions to the castle, and in his episcopate, John Lord Neville presented the magnificent altar screen to the cathedral. This was made of Caen stone carved in London, and brought down to Hartlepool by ship, as was also the beautiful tomb now standing in the south aisle of the nave. The tomb stood originally in a chantry near, founded by the same Lord Neville, and was made by his orders, before his death, for himself and his wife. The effigies are of alabaster, but nothing of them remains except two almost shapeless masses; while the tomb itself is of Caen stone, wrought all round with beautifully designed niches, each containing a statue of one of their children. Lord Neville died in 1386, so that this tomb was made a year or two before. At Staindrop there is another fine tomb belonging to one of this family, and in the chancel of the church of S. Brandon, at Brancepeth, is an effigy of one of the Nevilles, cross-legged and colossal in size, but of a considerably earlier date. In this church is also a very good oak chest, richly panelled and carved, and apparently of about the end of the fourteenth century. The front is formed of three boards framed into upright pieces at the ends worked into panels containing most wonderful grotesques.

Walter Skirlaw, who obtained the bishopric in 1388, built the cloisters of the cathedral, and completed the tower of Chester-le-Street by the addition of a magnificent spire. The lower part of the tower was Early English; on this was raised another story, octagonal in plan, above which was built a spire 156 feet high, one of the loftiest in the district, which is singularly deficient in such buildings. Cardinal Langley succeeded Skirlaw in 1406, and issued a commission to inquire into the state of the various churches of the diocese, many of which were found to be in a most dilapidated condition. Lanchester appears to have been one of the worst, and the clerestory and western tower had to be entirely rebuilt. Considerable additions were also made to the Galilee, the external walls and roof being in a great measure rebuilt, and two more shafts, with caps, bases, and mouldings exactly imitated from the original Norman work, being added to each of the piers. Langley also erected a chantry for himself in the Galilee, against the west door of the cathedral, but this was removed a few years since.

From this time the history of the diocese is one of architectural decay and desolation: the monuments of antiquity were treated with indifference and neglect, and in the troubles which afterwards brought about a better state of things, much that was beautiful and grand became irreparably ruined or lost. By the munificence of Bishop Cosin, in the seventeenth century, some attempt was made to revive the taste of former times. The cathedral was restalled throughout, in a manner far superior to that in fashion at the time; and the churches of Brancepeth and Sedgefield are full of stall work and screens of the same character. In spite, however, of neglect, not peculiar, unfortunately, to Durham, there still remains an abundance of most beautiful work throughout the county, of which it would be impossible in a short paper like this, or by means of drawings made in a few weeks, to give more than an idea. I trust, however, that the little I have said will be sufficient to show that although Durham is one of the least generally known of the architectural provinces of the country, this, though a great charm, is by no means its only one.

In conclusion, allow me to express a hope that some gentleman here may be induced to search out the materials for a more complete history of the life of Bishop Pudsey. Living, as he did, through the whole period of the great transition, further accounts of him would be invaluable, and might tend to throw considerable light on that interesting time. On the south side of one of the altars in the Galilee is the portrait of a bishop, in the act of blessing, traditionally said to be his, and the decorations surrounding it are clearly of his time. If this tradition be true, and there is nothing to be urged against it, we may congratulate ourselves on having a cotemporary likeness of this great man, which would form a valuable addition to such an account as I suggest. The tale of his life is the history of the great change from the massiveness of the Romanesque style to the lightness and elegance of First Pointed; and Durham was particularly fortunate, at such a season, in having a bishop, who, uniting the refinement of an artist to the power and influence of a position scarcely less than royal, was so well able to direct the energies of its builders. While the works he carried out, at the beginning of his rule, show all the richness and solidity of the Norman style, and the last are almost perfected specimens of Early English, through the whole series there runs some connecting link of likeness, in the carving of a cap, or the ornament of a moulding, to point out Pudsey as its author. Certainly no bishop left his mark more distinctly on the age than did he; and the gloriously illuminated munuscripts with which he enriched the convent library, as well as the fine churches which his wealth and diligence erected throughout the province, show both the purity and the excellence of his taste.

The Chairman, Professor T. Hayter Lewis, V. P., said it afforded him great pleasure to preside on the occasion of the reading for the first time of a paper by his late excellent pupil and now good friend, Mr. Tavenor Perry. He would go so far as to say that if all students who gained prizes, made as good use of their nine weeks' tour as Mr. Perry had done, they might in future expect some excellent papers from them. He would add, that of all the architects, or patrons of architecture, who had existed in this country, none had been more energetic than he to whom Mr. Perry had so much alluded in his paper, viz., Bishop Pudsey, and a detailed examination into the history of his life and works would be most interesting and instructive. For in him they had a man beginning with the style only prevalent in his early days, and carrying it through a stage of transition up to something like an entirely new style. The *modus operandi* of this would be a very interesting subject, and one which was still but very little understood. He saw several gentlemen present who were well competent to discuss Mr. Perry's paper, and he should now be happy the hear the remarks which they had to offer.

Mr. Wyatt Papworth (responding to the invitation of the Chairman) said he must take up his old ground as regarded the Bishops having acted as architects, and express his doubts whether Bishop Pudsey could be classed as one of the profession, especially as the names were now known of two persons who were most probably his architects;* but he had not given any particular study to the life of the prelate. He begged to state that he was somewhat disappointed in the paper just read, as he had anticipated that it would have been descriptive of Mr. Perry's tour and of his investigations, which he considered would have been more in accordance with the conditions of the Pugin Memorial Fund.

Mr. John P. Seddon (Hon Sec.) said the description of the tour had been already deposited with the Institute, and the paper read this evening was an additional contribution on the part of Mr. Tavenor Perry.

Mr. Wyatt Papworth regretted that he should have misconceived the object of the paper, and added that the number of drawings by which the paper was illustrated displayed a great amount of industry, and he hoped that the exhibition of them this evening would be an incentive to future students under this fund, to make their tours equally interesting and instructive with that by Mr. Perry.

Mr. J. H. Parker said he was hardly sufficiently acquainted with the part of the country alluded to, to be able to say much on the subject brought before them this evening. He thought it was very gratifying to have such a paper, and if others would follow in the same direction it would be a great advantage to the Institute. He thought that to take up the works of such a man as Bishop Pudsey would be most desirable, and nothing was more wanted than a good series of monographs of particular Bishops, whether they worked as architects or carried out any great works systematically. He had long projected a chronological series of the the principal architectural works of each of the Bishops known as builders. He began with Bishop Gundulph, of Rochester, in the eleventh century, but from his other avocations and his long illness he had been unable to follow it up. He should be glad if different members of the Institute would work out the several periods, more especially the period of transition. Durham was perhaps one of our best counties for this purpose, but he thought Lincoln was the most important of all, as he thought the architecture of that county was in advance of that of any other country in Europe; at the period of the introduction of Gothic architecture, in the time of Henry II. and Richard I., the people of Lincoln, he believed, erected the earliest and one of the finest Gothic buildings in the world. The idea of Professor Willis that the Cathedral of Lincoln was French architecture, was not borne out by examination; it was the work of the Lincoln school of architecture entirely. He (Mr. Parker) could find nothing French in it, and the same conclusion had been come to as the result of examination by the most eminent architects of France. He had traced out the architectural history of St. Hugh entirely, from his birth to his death. Another might be met with at Durham, and there was William, the Englishman, at Canterbury, who, he suspected, was the architect of Rochester Cathedral. It was of great interest to trace out the career of these persons, where they came from, where they went to, what works they executed, and where they ended their career; and nothing would tend to furnish the real history of architecture so much as a well prepared series of monographs. He thought for the production of a young man, the paper of Mr. Tavenor Perry was an exceedingly creditable one.

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* See Richard of Wolveston, a "prudens archtectus," in the paper "On the Superintendents of English Buildings," read December 1861, p. 53.

Mr. Wm. White only wished to express his gratification that the first Pugin Exhibition Studentship had been so successful as it appeared to have been in the person of Mr. Tavenor Perry, and it gave them great encouragement for the future. There might be some points open to criticism, both to the drawings submitted, and as to the kind of paper read, but he did not know where they could look for any to be quite free from criticism. He thought a most valuable suggestion was that made by the Chairman, as to the comparison of one work with another of the same period. He did not see, however, without these drawings before them for some time, and a careful study of them, how they could enter into the measurements and proportions, and see how far the different proportions of the different parts of the buildings either agreed together or varied one from the other; or how often the actual dimensions themselves were repeated in the different buildings. This was important, as showing the connection of one architect, or one set of architects or body of men, with another, inasmuch as he had found in many ancient buildings in the same neighbourhood that the same dimensions were found in several of the particulars, and the same proportion between the several parts. He thought this would help them more than anything to work out a further knowledge of the system of development, which they found in the old works; but he did not see how they were to make use of these illustrations for this purpose if the drawings were to be scattered, some in one place, some in another, and we were left without some means of collecting them together, either by copies, tracings, or other means, in order to get fully the connection of the different parts so classified that they might be referred to. As regarded Lincoln Cathedral, he thought that was one of those in which there were some signs of an apsidal termination, which had been rebuilt square,—in which case the original features might have been destroyed. He wanted to know whether the attention of the French architects who came to examine the cathedral, was specially directed to that which possibly might have tended, if anything did, to show its connection with French architecture.

Mr. J. H. Parker said the east end was re-built. There was said to be the foundation of an apse, but an apse was no proof of French work. He had accompanied some of the most eminent French archæologists of the day to Lincoln, and they all agreed there was nothing whatever French about it. The detail of French architecture was very different from English architecture; but Professor Willis said Lincoln Cathedral must have been the work of French architects, because we had nothing equal to it in England at so early a period; having nothing in England of the same date it must be

French! but the French architects decided there was nothing French in it, and they had nothing like it in France of the same date, therefore they did not believe the date. His own opinion was that England was in advance of France. During the long and peaceful reign of Henry II. of England and Anjou, the great change in architecture took place, and we got a decided start of France. The date of Lincoln Cathedral rested on the best authority, because they had the life of the great Bishop Hugh, written by his own domestic chaplain. He found from good local authority that the family of Du Noyer, the name of the architect, came to England with the Conqueror, and was settled in Lincolnshire for a century before the cathedral was built. That was one of the cases in which they got points of interest for comparison. With regard to the use of the drawings before them by Mr. Perry, he would say he had been driven to employ photography very largely. They could obtain a dozen or twenty copies of a photograph at very moderate cost compared with engraving. As an old publisher, his experience was that to make an engraving pay at the usual price, they required a demand for 3,000 copies, but as in this Institute there would not be a demand for probably more than 300, they could not make that pay. He thought for a society of this kind it was useful to have drawings photographed, and as many copies as were required.

The CHAIRMAN said one interesting feature in connection with Lincoln Cathedral was that after a survey of that edifice, M. Viollet Le Duc declared that no part of it was French, but that the whole was purely English architecture in design and detail.

Mr. THOMAS MORRIS said as their time was limited it was desirable to keep (within some moderate latitude) to the subject of the paper. He wished to return to Mr. Tavenor Perry's lecture, and would speak in terms of the highest commendation of the manner in which that gentleman had inaugurated the duties, business and labours of the Pugin Memorial Studentship. He had shown great judgment in the selection of the county of Durham as the scene of his investigations. With them it was in a manner an aboriginal county; it was not so well known as it ought to be, but that defect might be remedied by such explorations as the present. It was richer in example of the earlier Mediæval English architecture than any other county, and some of those examples were very elegant; it carried the exemplification of that (the Anglo-Norman) style from its commencement to its close, and was worthy of studious attention.* He thought, should other gentlemen, following Mr. Tavenor Perry, select districts of great historical interest, and send their observations for the consideration of the Institute, it would bring those observations advantageously into one central channel, and if their stores were enriched with epitomes of those works, such a valuable and interesting stock of information would be obtained as would lead them all to attach great interest to the institution of the Pugin Travelling Studentship.

Mr. EDMUND SHARPE, as an early labourer in the field which Mr. Tavenor Perry had chosen for himself, would add his testimony to the able manner in which he had investigated the works of Bishop Pudsey, and the other works of the diocese of Durham. They could scarcely have a better proof of the worth of the studentship founded by Pugin. Perhaps if the investigations had been extended beyond the limits of Durham, and had included such contemporaneous buildings as Teignmouth Priory for instance, with which Bishop Pudsey was undoubtedly associated, the interest of the tour would have been increased. They had to thank the author of the paper, not only for the copious manner in which it was illustrated, but for the manner in which he had entered into the documentary part of the case, generally too much neglected by architects, but which Mr. Perry had ably investigated. By adding the province of the archæologist and investigator to that of the architect, he had added much to the interest of his production. He (Mr. Sharpe) should have been inclined to have followed Mr. Parker into the district he had adverted to, but he agreed with the last speaker that it was better to confine themselves to the paper before them. With regard to Lincoln Cathedral, he would only remark, that although the leading features were English, yet there were features in that building which appeared to him to have a French tendency to say the least.

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* Durham owes its unusual abundance of ancient work to the fact of having been very much in the conservative hands of the Church, as well as to the massive characteristics, termed by Doctor Johnson the "rocky solidity and indeterminate duration," of the memorials themselves.

Mr. W. SLATER had nothing to add further than to express his gratification at the way in which Mr. Tavenor Perry had carried out this inauguration of the Pugin Studentship, and he had great pleasure in proposing a vote of thanks to him for his very excellent paper.

The CHAIRMAN said he thought his young friend was entitled to a double vote of thanks—first for his paper, and secondly for his history of his tour, to which Mr. Papworth seemed to give the preference.

Mr. WYATT PAPWORTH rose to second the vote of thanks to Mr. Perry. He was glad to do so, as it gave him the opportunity of stating that since he first spoke, he had found the account of Mr. Perry's tour laying on the table, and had been glancing through it. He would again say, that to him the paper of this evening would have possessed greater interest, had the very interesting diary been prepared and interspersed with some of the literary matter contained in the paper; the result of which, he begged to suggest, would have been a more valuable contribution, and he thought one more suitable to be recorded (under the special circumstances) in the Transactions of the Institute. The difference lay in the archæological and the architectural treatments of the subject; but he seconded the vote of thanks with very much pleasure.

The vote of thanks was unanimously accorded and the meeting adjourned.

Testimonial to Professor Donaldson

One hundred and forty five gentlemen having expressed their concurrence in the proposal, a Meeting was held on the twenty fifth of March 1865 at the rooms of the Royal Institute of British Architects and a communication to the Hon. Secretary from Mr. Donaldson was read, expressing his high appreciation of the kind mark of approval of his services, ~~but~~ stating however that he ~~still~~ felt averse to any personal testimonial, but at the same time freely offered the use of his name for any act that might benefit the Profession and the art.

Several propositions having been taken into consideration, it was at length Resolved - That the Meeting conscious of the eminent services rendered to his Colleagues in Art on all occasions by Professor Donald President of the Royal Institute of British Architects: and desirous to do him honour, considers it expedient that on ~~the~~ his retirement from the Professorial Chair of Architecture in University College. London, a Medal be struck bearing his portrait and that such Medal be entrusted to the Royal Institute of British Architects to be given to Students in Architecture annually, or at such other intervals of time as may be hereafter determined.

Subscriptions are received at the rooms of the Royal Institute of British Architects: 9 Conduit Street. Hanover Square.

March 30th: 1865.

Charles. C. Nelson
Hon. Secretary to the Donaldson Testimonial

Memm. —

Do not send this to Mr. Donaldson with his notice paper.

This should be sent out with the next notice of the R.I.B.A. It should be on a separate half sheet - with the heading as above and nothing more. (A proof to Conduit St. as soon as may be.

OCCASIONAL PAPER.

TESTIMONIAL TO PROFESSOR DONALDSON.

At the Ordinary General Meeting of the Royal Institute of British Architetcs, January 15th, 1866,

THE PRESIDENT, A. J. B. BERESFORD-HOPE, M.P., &c., rose for the purpose of presenting to PROFESSOR THOMAS L. DONALDSON, Fellow, Emeritus Professor of Architecture, University College, London, a GOLD MEDAL bearing his portrait, struck at the instance of his professional brethren, to commemorate his eminent and zealous services in promoting the study of architecture, and spoke to the following effect:—

Gentlemen, and especially Professor Donaldson,—I now rise for the discharge of a duty which I assure you devolves upon me with very great pleasure, only mixed with regret that it should not have fallen upon one who could have discharged it more worthily,—on one who having been, it may be, a contemporary of our honoured friend, the late President, could speak with more experience than I can do of those distinguished and long services to this Institute, to University College, and to architecture in general, which we sum up and commemorate this evening by an act which I hope you will all accept, which I hope our friend especially will accept—not as a request to him to be less laborious—not as a hint to him at all to withdraw from those studies, and that wise and mature counsel to which we owe so much,—but only as another stage in that progress of his, every step of which has been marked by some great or self-denying exertion in the cause of that art to which he has devoted himself.

Addressing Professor Donaldson, the learned President continued,—Sir, I believe I may congratulate you on being more than of age as Professor of Architecture at University College, London, before you took the step of resigning that post. I am sure, Sir, no one expected you to do that—no one wished you to do it—no one anticipated you would do so; but you felt, having so long discharged the functions of that office, having educated, I believe, nearly 400 students—having been so familiar with that lecture-room, you would give place to one who might follow your example, carrying out, as you have done, that great task of training the young mind of the architect to consider that his craft was no mechanical, no base task, but one connected with the highest aspirations of the human mind, and with the most sublime efforts of the human imagination as well as with the most technical details of scientific study. It is, Sir, a great credit to University College, London, that it should, at the time it did, have recognised that architecture was one of the liberal studies, that it was one spoke in the wheels of the great academic curriculum. Other bodies, more ancient, have not yet done so; I venture to think that the old Universities, might take a useful lesson from this more modern institution. In your hands, Sir, the wisdom of the choice of University College was more than justified. I could almost have wished, that this memorial should have been presented to you in that lecture-theatre, wherein your form and voice are so familiar; but on the other hand *we* could not abandon you. *We* know here how intimately connected you have been with this Institute from the beginning. *We* know the part you took in it, the earnest labours you devoted to its foundation. Some here present, but no one better than yourself, will recollect that memorable 15th of June, 1835, when for the first time, I must say, this Institute took its complete form and shape. A few preliminary meetings had indeed taken place before then (Mr. Robinson and Mr. Papworth being in the chair), and some other young architects then present—yourself foremost among them. Yet it was first, as you, Sir, will recollect, on the 15th of June, 1835, that a formal meeting was held, though not indeed under this roof, with the President, Lord De Grey, in the chair. On that day you, Sir, as the first Honorary Secretary, and by the request of the Council, read that comprehensive, able, and eloquent paper, the very first of all our series, in which you so lucidly laid down the various branches of our duty, and the various ways in which we might make ourselves useful to the cause of architecture. In your case things have happened remarkably by cycles of fifteen years. Fifteen years, very nearly, after that day, again in the room of the Institute, the same distinguished nobleman, filling then as he had done for fifteen years the presidential chair, presented you with the Royal Gold Medal of this Institute, and with pride, and gratitude, and affection for his fellow worker, he hailed you as one who had done so much to place this body in the position which it then filled. Then as years went on, you, Sir, have occupied that position which you had so amply earned the right to, of conducting, as President, the affairs of the body of which you were one of the first founders, and you fulfilled that duty in such a way as to earn our respect and our gratitude. I assure you I feel it a great honour personally to have been called upon to succeed you in that position, in which I shall endeavour to show myself worthy of such a succession. These fifteens of years have passed away. You have had here all that we could give you. You have felt it due to yourself to retire from the position you filled at University College; and on this becoming known, your friends met together and decided that such a career as yours could not be passed over in this Institute. They felt that you were their's before you belonged to University College. But although this memorial has special reference to what you did at University College, yet that memorial must and should be given to you in the room of this Institute, and nowhere else. This medal is an impression in gold from a die sunk by Mr. Wyon (and a most admirable work of art it is), which will convey your features to future generations in this Institute. Struck in silver, it is intended to be a prize which this Institute will give from year to year. The Council have not yet fully decided upon the rules and conditions under which this prize will be awarded, but I hope and trust they may give it under conditions which will commemorate your connection with University College in its destination as well as in its origin. But the mere founding of the medal was not enough. It is a memorial of our gratitude to you, Sir, and we could not allow the medal to be given year by year, and yet that the man, in whose honour it was struck, should not have some tangible evidence, some material testimonial of what had been done; therefore, Sir, we determined to request you to allow us to place in your hands to-day a gold impression of that medal. In doing this we make only one request of you, which I am sure you will not refuse us—that among any special relics—anything you may prize as coming from the hands of your friends—you will not let this little piece of gold be forgotten. The inscription is in these words: "*To commemorate long and zealous services in promoting the study of architecture.*" It thus notifies that this is a presentation from your colleagues, and in placing it in your hands I can but repeat that the only thing, which will make us regret having given it to you will be, if it should at all put into your mind the idea that you have done enough yet—if for a moment it should make you think that your ability, energies, and zeal could now be laid up in ordinary. We do not give it with that intent. We hope that another fifteen years—another occasion may present itself, by which the services done in that interval may again be summed up to bring you forward here in a similar position, with the accumulation of fifteen years more veneration and affection on the part of those around you.

PROFESSOR DONALDSON said: Mr. President and Gentlemen,—I have never felt more oppressed than I now do upon receiving this mark of affection and regard on the part of my professional brethren. I thought that I had attained the highest testimonial possible, when I received the Royal Gold Medal of the Institute at the hands of Lord De Grey; but, Sir, you have been pleased to add so many kind words, to convey so feelingly the regard of my professional brethren, that it is impossible for me adequately to express the sentiments, which agitate by breast at this moment. Were I to measure what I have done, I feel it would fall very short of the estimate which you, Sir, and my professional brethren have indulgently placed upon it. If Newton stood on the sea shore, and picking up a pebble, compared it with the vast universe around him, must not I be conscious how little I have done, and incommensurate with the honour you have now conferred upon me. I beg, therefore, that you will be pleased to pardon the paucity of my expressions on this occasion, which are so inadequate to convey my feelings. If I have done somewhat in respect to education, perhaps I may be pardoned if for a few moments I briefly allude to the state of architectural education when I was myself a young man. It is now I think five-and-fifty years since I entered my father's office as an architectural pupil, and what was the state of our art then? There were no means of education within the reach of the student in connection with his profession. There was no University College—no Queen's College—to throw open their halls, and give instruction in their schools. My father left me free to follow my own wishes, and I sought to acquaint myself with the literature of our art, but there was no library—as there is now in the room adjoining this—of architectural works: and what were the books which had at that time been published? Pugin was then only beginning his series of Gothic works; Britton was in the midst of the publication of his 'Antiquities of England.' What were these to a young student? and Carter, admirable as he is as the first to discriminate the styles of mediæval art, still his work was insufficient to convey the knowledge which the student ought to possess. I wanted to draw, and I felt to conquer the human figure was the only way of getting the mastery of the pencil. I went, therefore, to the classes of Mr. Sass, who was the originator of that school, afterwards so successful in Bloomsbury Street. I had to go up to an attic in a house at the corner of King Street and Holborn, and there I worked from seven till nine in the morning, under the advantages of a good light from the north and a few plaster casts, to get a knowledge of drawing. I afterwards obtained an admission into the Royal Academy, where I studied the antique. But what were the opportunities there? If I had to make a study of an Apollo, or a Venus, or the Laocoon, it was necessary to make the drawing eighteen or twenty inches high. What student's mind could grasp the proportions at such a scale on which to draw the human figure? Those acquainted with the sketches of the great masters know, that they made them about six or eight inches high, and afterwards enlarged their figures from those sketches. But they did not pretend to draw them to a large scale at first. I went through the school of architecture—such as it was. I wished to study mathematics; but there was no professor of that science, and I went first of all to a Scotchman; and he was the means of introducing me to a very remarkable man—a clerk in the Legacy Duty Office, in Somerset House—who was considered particularly skilled in mathematics, but was blind. That man was no other than the son of Robert Burns, the Scottish poet—a most aimable, modest man; and he gave me my first instructions in mathematics. He had such a perfect mastery of figures, that he would in the middle of an equation point out if I committed any error, discovering it at once by mere mental calculation, however complicated the operation. I then wanted to learn water-colour drawing, and for that purpose I went to John Varley. My hour for visiting him was seven o'clock in the morning, because he had so large a practice that that was the only time he could afford me; but I found, instead of confining himself to teaching me water-colour drawing, he was desirous to initiate me into the mysteries of astrology! which was his great hobby. On the first morning, after being with him a quarter of an hour, he asked me, "How old are you? In what year were you born? In what month? On what day? At what hour? I replied that those were matters of which my mother was probably much better cognizant than myself. Varley replied, "Ask your mother, and when you come next time I will cast your nativity." He was an admirable master, but was ever talking about his favourite study of astrology! I mention these circumstances, gentlemen, to show you the great difficulties, which a young man had to encounter in the acquisition of his profession at that day. Was not that enough—after having visited Italy, Greece, and Turkey—to urge me to exert myself to establish in this country an efficient school of architecture. After being for some years in practice, I felt, in common with other professional brethren, the great want of an institution in which the character of the profession should be high, and conduce to that result; and hence the origin of this Institute, which progressed to its present position by steps so graphically pointed out by our worthy president. I was afterwards, as you are all aware, appointed to the Professorship of Architecture in University College, and in that position I felt an immense weight upon me. I was really frightened after having offered myself, when I found I was accepted; and I wrote to the authorities of the College to ask them to permit me to withdraw, for I felt I was inadequate to carry out the duty;—they would not grant me their permission to do so. I was obliged to put my shoulder to the wheel, and endeavoured to do my best to interest the young men in their studies, laying before them the best examples. I made myself more thoroughly acquainted with the principles of the art, and I endeavoured to impart them to those under my care in a manner, that should give them a love of the art itself, and enable them to master all its difficulties. This shows the obstacles hitherto experienced; and I believe the present state of our art, and the low condition of art-criticism in this country, prove how necessary is a good substantial education to enable the young architect to carry out his works in a manner, which shall represent the feelings and sentiments of the age in which he lives, and so as to be local, independent, and English, instead of being what they are now. There are many noble works of art—Mediæval, Italian, and Classic—which have been executed within the last few years, and the talents of my professional brethren are largely exhibited in many of the works now carrying out. But there is also so much of wild caprice observable in many works in the metropolis, as to prove how essential is the want of a good school to inculcate sound fundamental principles of art. This has been already begun in France in October last, and I think we have ourselves a lesson to learn from it. I had the honour of presenting to the Institute a scheme from Monsieur Trélat, a professor of that school, and our friend Mr. Burnell subsequently forwarded to us a pamphlet on the same subject. In France they have established a regular system of education, which is to occupy a period of three years. The students are to be engaged in their duties nine months every year. They attend daily from half-past eight till half-past four, from which one hour is taken for dinner. They are to go through the whole system, and the cost of the three years' education will not exceed £100. for each pupil. They will be taken through the whole history and principles of the art, mathematics, physics, geology, knowledge of materials, and all sciences connected with the profession. In fact, it is a thoroughly complete system, not to inculcate any particular style of art, but to initiate the student in all the studies which are necessary to form his taste. This, however, is not to supersede the instruction in the office of the architect, but it is only preliminary thereto, and to make him more efficient to enter upon the practical application of the principles he may have learned. Thus in the practice of their art they will bring into play all the science and all the knowledge acquired in the schools. It is my sincere wish that, with desirable modifications, such a practice should be adopted in England. I feel that my place in University College has been more than adequately filled in the appointment of my successor, and that my esteemed friend Professor Hayter Lewis will more than compensate for my retirement. I have occupied your time with these few remarks to show you the reasons why I have acted as I have done, and that it has been my wish through life to benefit, as far as my humble ability would enable me, the art which I so much love, and my professional brethren whom I so much esteem.

Royal Institute of British Architects.

9, Conduit Street, Hanover Square.
W.

Wedy. Apl. 5. 1865.

Did Messrs Davy send the Donaldson Testimonial Notice paper out to the Members RIBA with the last number of the Transactions. Several Members seem not to have recd. or seen it.

C. C. Nelson

It ought to be sent again with the next notice card & placed so to be sure not to escape the attn. : But it must also be forwarded to Mr. Donaldson

OCCASIONAL PAPER.

PRESENTATION OF ROYAL GOLD MEDAL,

At the Ordinary General Meeting of the Royal Institute of British Architects, April 30th, 1866.

The President rose and said,—Gentlemen, and Mr. Digby Wyatt in particular, I now have to proceed to that which I consider is the most honourable duty that I have to perform in the course of the session—a duty which, as it has happened by the absence abroad of our learned friend the late President, has twice devolved upon me during my year of office. This duty is, as you know, that of presenting Her Majesty's Gold Medal to that lover of and expert in architecture—be he architect, or be he amateur, or be he author—whom the Institute thinks most worthy of that great distinction. I hold it to be a signal merit of this Institute that this medal is given to various kinds and sorts of proficiency. I think that variety in our choice might be even enlarged; but, as it is, adjudication has not gone every year in the same groove, and on that account our award has a freshness and a power about it of which I hope we shall always realise the import. This evening we have to give it to one who has been long amongst us—who for three years, with honour and dignity and signal usefulness to the Institute, discharged the duties of our secretary, who has enriched our transactions with his papers, who has been always ready with pregnant remarks upon the many subjects which successively arise for discussion, always laborious in committees, always, in short, zealous to assist in any useful work which we were engaged in: therefore in giving the medal to Mr. Digby Wyatt, we give it to one who is of ourselves—thoroughly belonging to our body. At the same time we do not give it to one whose usefulness or whose fame is circumscribed within the four walls of this Institute. If my friend will allow me to speak in his praise to his face I must, as briefly as I can, recapitulate some of the various claims which he has upon us over and above that primary one which he has established as an architect, by the various buildings he has erected, by the Paddington Station, by his work at the India Office, and in the Post Office at Calcutta, and in the gigantic bridges he has helped to carry out in other parts of India. Over and above these I say stand those peculiar merits of our friend which I would desire specially to put before you this evening as the distinctive element of his fitness for the Royal Medal. In him we have the most distinguished combination of the literary man, the archæologist and the investigator, and withal of the practical architect of eminent administrative abilities. In his younger days, when other men might have been content to work out elementary questions, imitatively moving in a mere home circle of self-improvement, or else have been on the look out to abandon theory and concentrate themselves in the acquisition of profitable employment, Mr. Digby Wyatt was pursuing his travels in Italy, a land in those days not so much visited as in our iron times. He comes back from Italy, and he enriches the art-world with his treatises on the mosaics of the mediæval ages and upon their metalwork—branches of knowledge essential to the architect of this day who has become so much more an artist than members of his calling used to be—so much more the decorator of his own building than formerly, and on that account so much more craving for food to nurture and to develope his inventive taste, which is alone to be found in technical instruction in details too long overlooked. In a short time, when the age of great exhibitions came on, we saw our friend sent on a Government mission to Paris to inspect that apprentice trial which was the precursor of 1851, from which he returned with a Report which went far to fix the administrative mind of England as to the principles on which that great success, the Exhibition of 1851, should be carried out. Of the part which Mr. Digby Wyatt played in that Exhibition it is not necessary for me to speak—you all know it full well; and I conceive that man happy who had to play his part in the Exhibition of 1851. Whatever questions, whatever differences, whatever contests, whatever struggles, whatever investigations and whatever failures or successes may have attended the long series of exhibitional experiments which have found their habitation towards the south of Hyde Park, one of them, the first of all, stands out in serene isolation and connected with it the name of our honoured friend is seen, *sans peur et sans reproche*. It was a brilliant scintillation—sparkling but short-lived—yet leaving its long trail of light behind it. I need not tell you that beside the engineers who produced the first Crystal Palace stood Mr. Digby Wyatt, as artistic adviser, and as architect of various important additions to the structure, while to his pen is due the letter-press of that magnificent work which records the industrial triumphs of that memorable occasion. Then, from that Exhibition of 1851 grew up the second Crystal Palace of Sydenham, and we all know when we go there, that besides the varied amusements and entertainments with which we are provided in that most agreeable place, there is a solid mass of architectural and artistic lore for those to study who care to be taught,—living examples of the history of form and style. Of that—the serious side of Sydenham—we know Mr. Digby Wyatt (with his colleague, Mr. Owen Jones) was the chief organizer, and the Pompeian, the Byzantine, the Mediæval, the Italian, and the Renaissance Courts stand as monuments of his untiring application and judicious taste. Then we come to another period of his life which includes his special work here, of which I have already spoken. Next came the Exhibition of 1862, in which we know Mr. Digby Wyatt was not one of the consulting architects, while the Exhibition building of 1862 is one which we must now think of with respectful silence, because the excellent and amiable man who designed it is no longer among us. But as a juryman in 1862 Mr. Digby Wyatt again helped in the good cause. On the enormous amount of his consultative labours, on the number and the value of the books and papers written and lectures given by our friend during so many years, it is not necessary that I should comment. Here, there, and everywhere, full of practical suggestion and activity, full of learning and of wise counsel, we see Mr. Digby Wyatt, young in years but old in labours. We trust he will spare himself so much as to husband those energies, and for many years hence continue as active, useful, and earnest as he has shown himself heretofore, while his stores of learning accumulate, and his experience ripens. We give him this medal as a retaining fee to keep him with us, to keep him up to his work, to re-enlist him in that great development of architecture in which the needs of the present day are struggling for an expression borrowed yet modified from the experiences of the past, which, if I can at all decipher the bent of his mind, seems to be that up to which our friend is tending; and which he has ever striven to embody in the buildings which he has executed, the books which he has written, and the practical occupations in which he has mixed. Such being, I venture to say, Mr. Digby Wyatt's peculiar mission, I trust he will go on studying many facts, maturing many theories, casting them together as he can do with his fertile and eloquent pen and his accurate and picturesque pencil, into teachings for us and those who come after us.

The President, having handed the Royal Gold Medal to Mr. Digby Wyatt, resumed his seat amidst much applause.

Mr. M. Digby Wyatt, who was greeted with protracted applause, said, in addressing the President: You have rightly remarked, Sir, that it is possible for a man to give, as you have done, many medals in his lifetime, but it is not in the order of things for a man to receive the medal you have just handed to me more than once. So far as the task of thanking this meeting for the high honour now conferred upon me is concerned I must, then, be regarded as a novice, and I have to ask your indulgence now, not only on account of this my noviciate, but because in moments of such strong excitement as now affects me, I may not be able to speak so coherently or tersely as I may have done when I have addressed you at other times when my feelings have not been touched as they are now. So far as I know there are only two occasions on which it is justifiable for a man to be egotistic. Those are—firstly, when he has been trying some experiment in which he believes he has been successful and desires to communicate to others, the results of his experience, and the means whereby they may become as successful as he may have been; and the second, when it is his duty to attempt to discharge a heavy debt of gratitude. With respect to the first occasion, I may observe that your action of this evening convinces me that I have tried in my life an experiment which has borne good fruits; and I desire, therefore, to tell you, as far as I know them, the processes whereby that result has been obtained. Very early in life I determined that, as far as possible, I would overcome the difficulties which always attend the expression of one's thoughts. A man may be clever or stupid; but in either case it is only by education and practice that he can remove the natural impediments inherent to any successful delivery or exposition of his ideas, and thus free himself from a great drawback to the development of his abilities. As soon, therefore, as I saw my path in life tolerably straight before me I determined to endeavour to equip myself with such intellectual weapons as to allow of my presenting myself to the world in the most favourable shape my abilities would allow me to assume. I read the best authors attentively in various branches of literature, and listened critically to the best speakers. I cultivated the society of the most accomplished artists; and by such means endeavoured to obtain facility and style in writing, speaking, and drawing. The second principle which I learnt early in life was to feel that all the knowledge I could acquire might be brought to bear upon the art I intended to practice. Every branch of study, however apparently remote at first sight it might appear from architecture, I felt justified in regarding as aids to the student's "battle of life." I determined, therefore, to learn what languages I could in order that I might be able to study the careers and works of foreign masters, and endeavoured to make myself acquainted with those branches of industry upon the combination of which I saw many important results in connection with architecture to be altogether dependent. This conclusion, to which I was mainly brought by reading Welby Pugin's eloquent exposure of the evil consequences of neglecting such matters, led me to take great interest in the improvement of the manufactures of the country in the direction of art, and more particularly those connected with my profession. It was the study I had given to this branch of our art in early life, and the reputation I obtained for writing on a subject in which at that time comparatively few took any interest, which led to my connection with the Great Exhibition, which in turn induced my engagement for the designs of the Paddington Station with Mr. Brunel, the Crystal Palace works, and many other matters. The third resolution I formed not only in youth, but still retain, was that as long as it should be in my power I would never give up learning. I felt very strongly how difficult it would be within the compass of a lifetime to acquire the knowledge necessary to qualify one to do even tolerably. Without knowledge as an aid to talent, talent is virtually useless. The man who is clever at starting will be stimulated by its possession to exertion, and the value of his work will be in the ratio of his knowledge; while the man who is stupid will find in the knowledge he may acquire the best substitute for his lack of natural ability. I have not, neither will I, let the grass grow under my feet in picking up to the best of my capacity what others may have to teach me. In the "war of styles" even, I am always ready for conviction—"open to all" parties, and I hope unduly "influenced by none." Such latitudinarianism may, perhaps, account in some degree for the neutral position I occupy between those contending parties whose controversies, or, better still, whose mutual agreement, may, it is hoped, eventually lead to, and confirm us in, the right path in art. The fourth resolution I made is a practical one, which I have found useful in all business transactions, and that is, when called upon in any part of my duty to serve a body or an individual, to do for them or for him exactly what I would wish to be done if the case were my own. On this principle only I have invariably recommended my clients to build or not to build, to buy or to sell, and have aided in realising for them what I sincerely believed to be best for their ultimate interests. Acting on this principle I hope I may say with truth that I have gained the honest confidence of all with whom I have been brought into contact in the business relations of life. I earnestly desire you to understand that it is in no boastful spirit that I make these remarks, but because I have learnt from experience that the principles I have alluded to have been useful to myself; and because I believe that they may be of no less benefit to any who may come after me and adopt them. In dealing with the gratitude part of my subject, I would first record my thanks to you, Sir, for the kind manner in which you, as President, have made this presentation to me. Your accomplished father's noble essay formed the first prize I ever received in my profession, and from our first acquaintance, now many years ago, you have ever been a kind friend to me, though our views have occasionally differed. It is, Sir, delightful to me to think that my tastes have been so far congenial with your own as to have secured me your valued friendship. Secondly, I must remark that it is in my opinion impossible for a man to excel in art, or to achieve a position in any artistic career, unless his life is built up upon the labours not only of the great men of Old, but upon those of the contemporaries and elders who tread the same path leading to honour and esteem. My first ideas upon architecture at all acquired before I went abroad were based, not on my study of the literature of my profession only, but on the admirable practical example set me by my eldest brother, in whose office I was brought up. My thoughts were specially directed to Colour and to Industrial Art by the teachings and practice of Welby Pugin and Owen Jones. From Professor Donaldson I acquired an elevated idea of the value of Catholicity in Art, and from Mr. Tite's success I saw what energy and clear-headedness could achieve in great business transactions. These, and others in their several departments, set me examples which it has been my pride and delight to follow. To all these gentlemen, present or absent, I return my sincere thanks for their invaluable teachings. To my eldest brother I am indebted not only for general brotherly affection, advice, and support, but for the actual means of entering upon and pursuing my profession. His personal example has also been of the greatest value to me, and I cannot but feel that if the members of this Institute had enjoyed the opportunities I have had of knowing his great abilities and versatility, he would have been standing here now to receive this medal instead of me. Lastly, I would record my thanks to the members of this Institute generally for the unanimous vote which has placed me in this honoured position. They have on all occasions supported me, put up with my weaknesses and appreciated, far beyond their deserts, my efforts to be useful. With most of those I am addressing I have long been bound by the tie of common interests and common labours, and I can only venture to hope that working in such a capacity I may have proved myself to have been useful in some degree. This hope is justified by the fact that you have given me this great reward this evening. To a certain extent, no doubt, I may regard this high tribute as having been conferred in a fraternal spirit upon one who has worked with you, and shown himself on all occasions essentially of you. Knowing my own unworthiness, I cannot but deem it possible that feelings of personal regard may have led you to take a perhaps over-indulgent view of my small merits. Be that as it may, I would venture to reciprocate any such feelings of affection, should they exist, and to tender to you all my warmest thanks for the great honour conferred upon me this evening.

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1851	1862		Fowler, Charles, Jun., 12, Furnival's Inn, E.C.
	1864		Fowler, James, Louth, Lincolnshire.
1841	1857		*Francis, F. J., 38, Upper Bedford Place, Russell Square. W.C.
	1845		Freeman, Charles, 60, Lincoln's Inn Fields, W.C.
	1866		Freshwater, Henry Thomas, 24, New Street, Spring Gardens, S.W.
	1838		Fulljames, Thomas, Barton Street, Gloucester.
1857	1861		Gale, Joseph, 150, Bermondsey Street, S.E.
	1848	(D)	*Garling, Henry, 27, Bedford Row, W.C.
1843	1857		Garling, H. B., 11, King's Road, Bedford Row, W.C.
1849	1853		*Gibson, John, 13, Great Queen Street, Westminster, S.W.
	1854		Gilbert, Alfred, South Bank, Grote's Buildings, Blackheath, S.E.
	1860		Giles, Charles E., 52, Westbourne Park Road, W.
	1854		Gill, J. E., 1, Fountain Buildings, Bath.
	1863		Godwin, E. W., F.S.A., 23, Baker Street, W.

ELECTED.			
ASSOCIATE.	FELLOW.		
1836	1841	(D)	†*Godwin, George, F.R.S., F.S.A., 24, Alexander Square, Brompton, S.W.
	1860		Godwin, Sidney, 24, Alexander Square, Brompton, S.W.
1840	1847	(D)	*Good, J. H., 75, Hatton Garden, E.C.
	1860		Gray, Charles, 22, Westbourne Place, Eaton Square, S.W.
	1866		Green, James, Portsmouth House, Burnley.
	1842		Griffith, John, 16, Finsbury Place South, E.C.
	1847		Griffith, W. P., F.S.A., 16, Guildford Street, Russell Square, W.C.
	1835	(D)	*Gutch, George, 24, Porteus Road, Paddington, W.
1852	1860		Habershon, Edward, 37, Bedford Place, Russell Square, W.C.
	1852		Habershon, W. G., 38, Bloomsbury Square, W.C.
1835	1847		*Hadfield, Matthew Ellison, Knowl House, Sheffield.
1838	1854		*Hakewill, E. C., 5, South Molton Street, W.
	1842		*Hakewill, J. H., 50, Maddox Street, Bond Street, W.
1848	1860		*Hansard, Octavius, 8, Argyll Place, Regent Street, W.
	1865		Hansom, Charles F., Clifton.
	1834	(D)	†*Hardwick, Philip, R.A., F.R.S., F.S.A., 21, Cavendish Square, W.
	1850		*Hardwick, Philip Charles, F.S.A., 21, Cavendish Square, W.
	1850		Harrison, William Rooke, Courbevoie, près Paris.
	1862		Haycock, Edward, Jun., Monkswell Terrace, Shrewsbury.
1855	1861		*Hayward, Charles Forster, F.S.A., 20, Montague Street, Russell Square, W.C.
	1857		*Haywood, William, Guildhall, City, E.C.
1838	1860		Henman, Charles, Dingwall Road, Croydon, S.
	1849		*Hesketh, Robert, 7, Royal Exchange, City, E.C.
	1864		Hine, James, Plymouth.
1854	1861		Hirst, J. H., 3, Royal Promenade, Bristol.
1838	1866		Hiscocks, Alfred Jas., Alfred Lodge, East Hill, Wandsworth, S.W.
1835	1847	(D)	Hopkins, J. D., 25, Bedford Square, W.C.
	1861		Hopkins, William J., Sansome Lodge, Worcester.
1848	1861		Howell, C. H., 3, Lancaster Place, Strand, W.C.
1856	1859		Humbert, A. J., 27, Fitzroy Square, W.
	1852		†*Hussey, R. C., F.S.A., 16, King William Street, Strand, W.C.
	1840		*I'Anson, Edward, 7A, Lawrence Pountney Hill, E.C.
	1835		†*Inman, W. S., Frome Selwood, Somersetshire.
	1858		Jeckel, Thomas, 11, Gloucester Road, Kensington, W.
	1847		*Jennings, Joseph, 11, Langham Street, W.
1861	1865		Johnson, Robert J., Newcastle-upon-Tyne.
1842	1858		*Jones, Horace, City Architect, Guildhall, E.C.
	1843	(D)	†*Jones, Owen, 9, Argyll Place, Regent Street, W.
	1834	(D)	†*Kendall, H. E., 10, King William Street, W.C.
1835	1842		*Kendall, H. E., Jun., 33, Brunswick Square, W.C.
	1857		*Kerr, Robert, Professor of Architecture at King's College, London, Carlton Chambers, 12, Regent Street, W.
1856	1860		Knightley, T. E., 25, Cannon Street, City, E.C.
	1862		Knowles, George, Leeds Road, Bradford, Yorkshire.

ELECTED.			
ASSOCIATE.	FELLOW.		
	1847		*Knowles, James Thomas, 1, Raymond Buildings, Gray's Inn, W.C.
	1837		*Lamb, E. B., 3, Hinde Street, Manchester Square, W.
	1864		Lanyon, Chas., Dublin and Belfast.
	1863		Laver, A., Ottawa, Canada.
1859	1864		Laws, Charles, 12, Doughty Street, W.C.
1845	1860		Lett, Frederick, 36, Essex Street, Strand, W.C.
1845	1852		†*Lewis, T. Hayter, F.S.A., Professor of Architecture at University College, London, 9, John Street, Adelphi, W.C.
	1866		Livesay, Augustus Frederick, Portsmouth.
1856	1860		Low, George, 10, Basinghall Street, City, E.C.
	1865		Lynn, William H., Belfast.
	1865		Mackison, William, Stirling.
	1842		*Mair, George J. J., F.S.A., 41, Upper Bedford Place, Russell Square, W.C.
	1856		Markham, S. S., The Birches, Kingston Hill, S.
	1856		*Marrable, Frederick, 21, Whitehall Place, S.W
1851	1860		Martineau, E. H., 24, Lincoln's Inn Fields, W.C.
	1846		*Mayhew, Charles, 6, Chester Terrace, Regent's Park, N.W.
	1859		Mayhew, George W., 14, Argyll Street, Regent Street, W.
	1836	(D)	†*Mocatta, David, F.S.A., 29, Gloucester Square, Hyde Park, W.
1850	1856		*Morgan, George, 2, Dane's Inn, Strand, W.C.
1838	1850		*Moseley, Andrew, Trinity Chambers, Charing Cross, S.W.
1839	1849		*Mylne, R. W., F.R.S., F.S.A., 21, Whitehall Place, S.W.
1845	1859		*Nash, Edwin, 5, Adelaide Place, London Bridge, E.C.
	1843	(D)	†*Nelson, Charles C., F.S.A., 30, Hyde Park Gardens, W.
	1860		Newman, A. S., 185, Tooley Street, Southwark, S.E.
1853	1860		Newton, Harry R., 6, Argyll Street, W.
	1861		Nicholson, Thomas, Hereford.
	1835	(D)	*Noble, James, Florence Villa, 2, Warwick Gardens East, W.
1850	1857		*Norton, John, 24, Old Bond Street, W.
1849	1862		Oliver, Harry, 78, Gower Street, Bedford Square, W.C.
	1866		Oliver, Thomas, 1, Ridley Place, Newcastle-on-Tyne.
	1865		Ordish, Frederick W., Queneboro', near Syston, Leicestershire.
1841	1846	(D)	*Papworth, J. W., 14A, Great Marlborough Street, W.
	1860		*Papworth, Wyatt, 14A, Great Marlborough Street, W.
	1834	(D)	*Parker, Charles, 75, Great Russell Street, W.C.
	1860		Parris, Robert, Wolsingham Place, Lambeth, S.
	1861		Parsons, Henry, 10, Old Jewry Chambers, E.C.
	1859		Payne, E. J., 1, Bennett's Hill, Birmingham.
1850	1859		*Peacock, Joseph, 15, Bloomsbury Square, W.C.
	1860		*Pearson, John L., F.S.A., 22, Harley Street, W.
	1840		*Pennethorne, James, 7, Whitehall Yard, S.W.
	1865		Pennington, Nathan G., Bank Chambers, Essex Street, Manchester.
1846	1848		†*Penrose, F. C., M.A., Cathedral Surveyor's Office, Chapter House, St. Paul's Church Yard, E.C.
1849	1861		*Penson, R. Kyrke, F.S.A., Ferryside, Kidwelly, South Wales.

ELECTED.			
ASSOCIATE.	FELLOW.		
	1865		Perkin, William, East Parade, Leeds.
1860	1866		Phipps, Charles J., F.S.A., 5, Paragon, Bath.
	1863		Phipson, A. B., 31, Cannon Street, Birmingham.
1850	1859		*Phipson, R. Makilwaine, F.S.A., Norwich and Ipswich.
	1864		Pite, A. R., 38, Bloomsbury Square, W.C.
1837	1846		*Pocock, William W., 35, Craven Street, Strand, W.C.
	1863		Pope, T. S., Jun., Guildhall Chambers, Bristol.
1856	1860		Porter, Alfred, 2, Fir Grove Place, Brixton, S.
1850	1855	(D)	*Porter, Frederick W., 16, Russell Square, W.C.
1857	1860		Pownall, Frederick H., 30, Gower Street, Bedford Square, W.C.
1840	1843	(D)	*Pownall, Geo., 5, Westminster Chambers, Victoria Street, S.W.
1861	1861		Pritchett, G. E., F.S.A., 32, Great St. Helens, Bishopsgate, E.C.
	1863		Pritchett, J. P., Darlington.
	1862		Pugin, E. Welby, Ramsgate.
	1861		Pullan, Richard P., 15, Clifford's Inn, W.C.
	1862		Randal, J. L., Belton House, Shrewsbury.
1848	1860		Reeks, C. F., 12, Middle Scotland Yard, S.W.
	1863		Reid, W. H., 22, Courtenay Street, Plymouth.
	1838	(D)	Richardson, C. J., 34, Kensington Square, W.
	1860		Roberts, Edward, F.S.A., 25, Parliament Street, S.W.
	1837	(D)	*Roberts, Henry, F.S.A., Athenæum Club, Pall Mall, S.W.
1853	1860		Robins, Edward C., 13, Southampton Street, Strand, W.C.
1858	1866		Robinson, Frederick J., 45, Friar Gate, Derby.
	1860		Robinson, G. T., Orleans House, Leamington.
1860	1864		Robson, Edward R., Town Hall, Liverpool.
	1845		*Roumieu, Robert L., 10, Lancaster Place, Strand, W.C.
1854	1856	(D)	Rowe, R. R., F.S.A., 10, Emmanuel Street, Cambridge.
1851	1860		Salomons, Edward, 63, King Street, Manchester.
	1836	(D)	†*Salvin, Anthony, F.S.A., Hawksfold, Fernhurst, Haslemere.
1850	1861		Salvin, Anthony, Jun., 4, Adam Street, Adelphi, W.C.
	1866		Saunders, James Ebenezer, 9, Finsbury Circus, E.C.
	1849		†*Scott, George Gilbert, R.A., F.S.A., 31, Spring Gardens, S.W.
1852	1860		*Seddon, John P., 12, Park Street, Westminster, S.W.
	1848	(D)	Sharpe, Edmund, Coed-y-celyn, Llanrwst, Caernarvonshire.
	1836	(D)	*Shaw, John, Christ's Hospital, City, E.C.
	1860		Shout, Robert H., 35, Coleman Street, City, E.C.
1849	1861	(D)	Sibley, R. L., 39, Great Ormond Street, W.C.
1855	1859		*Slater, William, Carlton Chambers, 4, Regent Street, S.W.
	1844	(D)	†*Smirke, Sydney, R.A., F.S.A., Professor of Architecture at the Royal Academy, 79, Grosvenor Street, W.
	1866		Smith, Alfred Louis, Melbourne, Australia.
	1834	(D)	†Smith, George, F.S.A., 4½, Frederick's Place, Old Jewry, E.C.
	1842		Smith, Thomas, 33, Bloomsbury Square, W.C.
1856	1863		Smith, T. Roger, 57, Strand, W.C.
1840	1850		*Spencer-Bell, James, 1, Devonshire Place, Portland Place, W.

ELECTED. ASSOCIATE.	ELECTED. FELLOW.	
1837	1856	(D) *St. Aubyn, James P., Lambe's Buildings, Temple.
	1850	*Stevens, I. H., 45, Friar Gate, Derby.
	1858	Stevens, N. E., Cheddar, Somerset.
	1857	Stone, Coutts, 16, Great Marlborough Street, W.
	1859	†*Street, George Edmund, A.R.A., F.S.A., 51, Russell Square, W.C.
1850	1861	Stride, Lewis, 5, Bloomsbury Square, W.C.
	1863	Tanner, Joseph, 16, Union Court, Old Broad Street, City, E.C.
	1845	Tarring, John, 23, Charles Street, Middlesex Hospital, W.
	1835	Taylor, John H., 22, Parliament Street, S.W.
1835	1842	*Teulon, Samuel Sanders, 9, Craig's Court, Charing Cross, S.W.
1854	1860	Teulon, William Milford, 96, Wimpole Street, W.
	1862	Thomason, Yeoville, 40, Bennett's Hill, Birmingham.
	1835	*Thomson, James, 57, Devonshire Street, Portland Place, W.
	1842	(D) †*Tite, William, F.R.S., F.S.A., M.P., 42, Lowndes Square, S.W.; Past President R.I.B.A.
	1854	Tress, Richard, 27, Queen Street, Cheapside, E.C.
	1860	Truefitt, George, 5, Bloomsbury Square, W.C.
1838	1856	(D) *Vulliamy, G., Metropolitan Board of Works, Spring Gardens, S.W.
	1856	Waller, F. S., Whittington Court, Andoversford, near Cheltenham.
1843	1850	Wardell, W. W., Melbourne, Australia.
1845	1860	*Waring, J. B., 2, Lidlington Place, Ampthill Square, N.W.
	1861	*Waterhouse, Alfred, 8, New Cavendish Street, Portland Place, W.
	1853	Weightman, J. G., Sheffield.
1844	1850	*Whichcord, John, F.S.A., 16, Walbrook, City, E.C.
	1859	*White, William, F.S.A., 30A, Wimpole Street, W.
1854	1857	Wigginton, W., County Chambers, Cornhill, E.C.
1848	1856	*Williams, G. B., 4½, Frederick's Place, Old Jewry, E.C.
	1864	Withers, Robert J., 51, Doughty Street, W.C.
1841	1847	*Wood, Sancton, 10, Craig's Court, Charing Cross, S.W.
1839	1846	*Woodthorpe, Edmund, 28A, Basinghall Street, City, E.C.
	1865	Worthington, Thomas, 54, John Dalton Street, Manchester.
	1864	Wray, Christopher Geo., 75, Cannon Street West, E.C.
1849	1854	†*Wyatt, M. Digby, F.S.A., 37, Tavistock Place, Tavistock-sq., W.C.
	1839	†*Wyatt, Thomas H., 77, Great Russell Street, Bloomsbury, W.C.

HONORARY FELLOWS.

ELECTED	
1837	Salisbury, the Most Hon. the Marquess of, K.G., 20, Arlington Street, S.W.
1860	Grey and Ripon, the Right Hon. the Earl de, Carlton Gardens, S.W.
1866	Dufferin, the Right Hon. Lord, K.C.B., 8, Grosvenor Square, W.
1865	Elcho, Lord, M.P., 23, St. James's Place, S.W.
1866	Grosvenor, the Right Hon. the Earl, M.P., Calveley Park, Cheshire.
1865	James, Sir Walter C., Bart., 6, Whitehall Gardens, S.W.
1865	Maxwell, Sir William Stirling, M.P., 128, Park Street, Grosvenor Square, W.

ELECTED.		
1836		Smirke, Sir Robert, F.S.A., Cheltenham.
1865		Akroyd, Edward, M.P., Bank Field, Halifax.
1866		Austen, Francis, Broadford House, Horsmonden, Kent.
1850	*	Beresford-Hope, Alexander J. B., Esq., M.P., L.L.D., F.S.A., Arklow House, Connaught Place, W.; President R.I.B.A.
1865		Buxton, Charles, M.P., Foxwarren, Surrey.
1835		Morrison, Charles, Esq., 57, Upper Harley Street, W.
1866		Powell, Francis Sharp, Esq. M.P., 1, Cambridge Square, Hyde Park, W.
1865		Ruskin, John, Esq., Denmark Hill, Camberwell, S.

HONORARY MEMBERS.

1839		Burgess, the Rev. Richard, B.D., 69, Cadogan Place, S.W.
1853		Faraday, Michael, Esq., D.C.L., F.R.S., Royal Institution, Albemarle St., W.
1863		E. A. Freeman, Esq., Somerleaze, near Wells, Somerset.
1850		Layard, Austen Henry, Esq. M.P., D.C.L., Athenæum Club, S.W.
1862		Parker, John Henry, Esq., F.S.A., Oxford.
1865		Parry, T. Gambier, Esq., Highnam Court, Gloucestershire.
1852	(D)	Petit, the Rev. J. L., M.A., F.S.A., 9, New Square, Lincoln's Inn, W.C.
1857		Shaw, Henry, Esq., F.S.A., 103, Southampton Row, W.C.
1838	(D)	Wilkinson, Sir Gardner, F.R.S., Brynfield House, Gower, Swansea.
1835		Willis, the Rev. R., M.A., F.R.S., 23, York Terrace, Regent's Park, N.W.

HONORARY AND CORRESPONDING MEMBERS.

		AUSTRIA.—	
1850		Herr Kranner, Architect	*Prague.*
1850		Christian Hansen, Architect	*Trieste.*
		BELGIUM:—	
1837		P. Bourla, Architect, Member of the Academy	*Antwerp.*
1852		J. P. Cluysenaar, Architect	*Brussels.*
1850		Monsieur Delsaux, Architect of the Province	*Liège.*
1842		Brunot Renard, Architect	*Tournay.*
		DENMARK:—	
1835		G. Hetsch, Architect.	*Copenhagen.*
		EGYPT:—	
1861		Monsieur Mariette	*Cairo.*
		FRANCE:—	
1847		Firmin Epellet, Architect of the Department of the Pas de Calais	*Arras.*
1848		Monsieur de Caumont	*Caen.*
1846	(D)	Girault de Prangey	*Dijon.*
1853		Monsieur Benvignat, Architect	*Lille.*

ELECTED.					
1842		Pascal Coste	-	-	*Marseilles.*
1840		Felix Duban	Members of the Institute of France.	Architects	*Paris.*
1835	(d)	J. J. Hittorff			
1835		L. H. Le Bas			
1846		J. B. Lesueur			
1855		Monsieur Gilbert			
1855		Alphonse de Gisors			
1856	(d)	Monsieur Viollet Le Duc			
1857		Monsieur Lefuel			
1844	(d)	César Daly, 6, Rue Sorbonne		Architects	*Paris.*
1855		Monsieur Armand			
1855		Monsieur Pellechet			
1855		Rohault de Fleury			
1857		Monsieur Didron Ainé			
1855		Monsieur Chenavard, Architect	-	-	*Lyons.*
1855		Monsieur Morey, Architect	-	-	*Nantes.*
1856		Hippolyte Durand, Architect	-	-	*Bayonne.*
1863		Charles Texier -	-	-	*Paris.*
1865		Monsieur Le Comte Melchior de Vogüé		-	*Paris.*
1865		Henri Revoil -	-	-	*Nismes.*

GERMANY.—

Bavaria—

1850	Herr Metzger	Architects	-	*Munich.*
1842	Friedrich Ziebland			
1865	Auguste Reichensperger	-	-	*Cologne.*
1865	Vincent Statz -	-	-	*Cologne.*

German States—

1838	Professor F. N. Hessemer	Architects		*Frankfort on the Maine.*
1842	Friedrich Peipers			
1848	F. Lange, Architect	-	-	*Fulda, Hesse Cassel.*
1865	J. H. Wolff, Architect	-	-	*Hesse Cassel.*
1842	Herr Fischer, Architect	-	-	*Saxe Coburg*
1865	Baudirektor Fischer -	-	-	*Carlsruhe.*

Hanover—

1837	(d)	Herr Laves, Architect to H.M. the King of Hanover	-	*Hanover.*

Prussia—

1851	Herr Stein, Architect	-	-	*Aix la Chapelle.*
1850	Herr Busse, Architect, Director of the Academy of Public Constructions			*Berlin.*
1861	Herr C. R. Lepsius			
1842	Heinrich Strack, Architect, Professor of the Royal Academy of Fine Arts			
1850	Herr Wilhelm Zahn			

ELECTED.		
1857	Herr Wiegmann, Architect	*Düsseldorf.*
	Saxony—	
1850	Herr Geutebrück, Architect of the University	*Leipzig.*
	SWITZERLAND:—	
1859	Gottfried Semper	*Zurich.*
	GREECE:—	
1857	Il Signor Lysandros Kaftangioglou	*Athens.*
	HOLLAND:—	
1839	Monsieur Zocher, Architect, Member of the Institute and Royal Academy of Fine Arts at Amsterdam	*Haarlem.*
1866	J. P. Cuypers	*Amsterdam.*
	ITALY:—	
1849	Il Signor Vantini, Architect	*Brescia.*
1839	Il Signor Besia, Member and Professor of the Royal Academy of the Fine Arts	*Milan.*
1865	Il Signor Giuseppe Mengoni	*Milan.*
1856	Il Signor Gardella	*Genoa.*
1850	Il Conte Selvatico	*Venice.*
1847	Il Cavaliere Niccolo Matas, Architect	*Florence.*
1844	Il Cavaliere Gio. Pietro Campana	*Rome.*
1842	Il Cavaliere Clemente Folchi, Architect, Vice-President of the Academy of St. Luke	
1848	Il Signor Bonucci	*Naples.*
1840	Raffaelle Politi	*Girgenti.*
	PORTUGAL:—	
1864	The Chevalier da Silva, President of the Institute of Portuguese Architects	*Lisbon.*
	MEXICO:—	
1853	Il Signor Cavalari	*Mexico.*
1851	El Senor Lorenzo Hidalga, Professor of Architecture in the Military College	
	RUSSIA:—	
1836	Alexander Brulloff, Architect, Professor of the Academy of Fine Arts	*St. Petersburg.*
	SWEDEN:—	
1855	Monsieur Axel Nystrom, Architect	*Stockholm.*
	TURKEY:—	
1840	(D) Gasparo Fossati, Architect to the Russian Embassy	*Constantinople.*
	UNITED STATES OF AMERICA:—	
1842	Frederick Diaper, Architect	*New York.*
1853	George Snell, Architect	*Boston.*

ASSOCIATES.

ELECTED.	
1864	Adams, Charles J., 118, High Street, Stockton-on-Tees.
1851	Allom, Arthur, 24, Haymarket, S.W.
1864	Anderson, J. McVicar, 2, Norfolk Crescent, W.
1857	Arding, Charles B., 23, Bedford Row, W.C.
1839	Artis, Addington, 19, Warwick Street, Golden Square, W.
1846	Baker, A. J., 35, Gt. St. Helen's, E.C.
1864	Baker, A. S. C., 52, Lower Belgrave Place, Pimlico, S.W.
1864	Baker, W. A., 108, Gower Street, W.C.
1847	Banks, Robert R., 1, Westminster Chambers, Victoria Street, S.W.
1860	Barber, William S., Halifax, Yorkshire.
1858	Bartleet, William G., Pinner's Hall, Old Broad Street, E.C.; and Brentwood, Essex.
1849	Baxter, R. C., 21, Abchurch Lane, City, E.C.
1866	Bayne, R. R., 16a, Great Smith Street, Westminster, S.W.
1845	Beck, William, 33, Finsbury Circus, E.C.
1863	Birchall, Edward, 2, Park Place, Leeds.
1864	Birkett, Daniel, 1, Devonshire Street, Carlisle.
1866	Blashill, T., 10, Old Jewry Chambers, E.C.
1860	Blessley, R. K., Westbourne Villa, Eastbourne, Sussex.
1864	Booth, Lawrence, 8, Essex Street, Manchester.
1865	Bottle, Jonathan T., 27, King Street, Great Yarmouth.
1858	Britton, T. A., 1, Milford Villas, Ealing, W.
1839	Browne, John Henry, 1a, Holland Park, Notting Hill, W.
1847	Browning, E., Stamford, Lincolnshire.
1861	Buckeridge, Charles, 39b, St. Giles's Street, Oxford.
1838	Buckley, William A., 5, Orme Square, Bayswater, W.
1860	Burgess, Hartley W., 16, Walbrook, City, E.C.
1841	Burn, George Adam, 9b, New Broad Street, City, E.C.
1849	Burnell, Henry H., F.S.A., 20, Cheyne Walk, Chelsea, S.W.
1835	Burton, Alfred, St. Leonard's-on-Sea.
1860	Burton, H. M., 6, Spring Gardens, Charing Cross, S.W.
1865	Caiger, Frederick Henry, 49, Charlwood Street, Pimlico, S.W.
1854	Capes, Silvester C., 30, Bedford Row, W.C.
1863	Carpenter, R. Herbert, Carlton Chambers, 4, Regent Street, S.W.
1866	Carter, William A., 36, Montpelier Street, S.W.
1856	Cates, Arthur, 7a, Whitehall Yard, S.W.
1864	Chancellor, Frederic, Pinner's Hall, Old Broad Street, E.C.; and Chelmsford.
1857	Christopher, J. T., 14, Bucklersbury, City, E.C.
1865	Churcher, George P., 5, South Molton Street, W.
1863	Clark, James, Buckley Wells, Bury, Lancashire.
1853	Coldwell, William G., 6, Huntingdon Street, Thornhill Square, Islington, N.

ELECTED	
1859	Collins, H. H., 5, Queen Street, Cheapside, E.C.
1859	Constable, John S., 6, Leonard's Place, Kensington, W.
1843	Cooke, Robert, 5, Kendal Place, Vassall Road, Brixton, S.
1842	Corbett, W., 10, Gray's Inn Place, Holborn, W.C.
1844	Cox, J. E., Oxford and Cambridge Club, Pall Mall, S.W.
1864	Darbyshire, Alfred, 7, St. James's Square, Manchester.
1865	Davis, J. Stacey, 26, Hamilton Street, Camden Town, N.W.
1859	Dawson, Henry, 16, Finsbury Place South, E.C.
1864	Dennison, J. W., 33, King Street, Cheapside, E.C.
1860	De Ville, Louis, 76, Cambridge Street, Pimlico, S.W.
1865	Dillon, Charles Rowe, 5, Bartholomew Villas, Kentish Town, N.W.
1864	Dollman, Francis T., 63, Gloucester Crescent, Regent's Park, N.W.
1855	Donaldson, J. S., 21, Upper Bedford Place, W.C.
1864	Drury, Edward Dru, 14a, Cannon Street, City, E.C.
1862	Edis, R. W., 4, Osnaburgh Terrace, Regent's Park, N.W.
1866	Emerson, William, 79, Hamilton Terrace, St. John's Wood, N.W.
1864	Ferguson, C. J., 8, The Crescent, Carlisle.
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1860	Fletcher, Banister, 7, Guildford Street, W.C.
1865	Florence, Henry Louis, 16, Christchurch Road, Streatham Hill, S.
1847	Forster, Richard, 9, Warwick Crescent, Harrow Road, W.
1863	Fowler, C. Hodgson, North Bailey, Durham.
1842	Fowler, Francis E. H., 32, Fleet Street, E.C.
1863	Frere, Augustus, 22, Henrietta Street, Covent Garden, W.C.
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1864	Giles, John, 20, Craven Street, Charing Cross, W.
1853	Goldie, George, 34, Gloucester Place, Portman Square, W.
1861	Gompertz, Francis T., 36, Bessborough Street, Pimlico, S.W.
1852	Goodridge, Alfred S., Bath.
1861	Green, Theodore K., 23, Finsbury Place South, E.C.
1856	Green, W. J , 25, Portman Street, Portman Square, W.
1838	Groves, Frederick H., 9, Craig's Court, Charing Cross, S.W.
1860	Grüning, Edward A., 9, Gresham House, Old Broad Street, City, E.C.
1863	Hadfield, Charles, Knowl House, Sheffield.
1861	Hall, Henry, 15, Duke Street, Adelphi, W.C.
1863	Harris, R. O., 60, Gloucester Crescent, Regent's Park, N.W.
1851	Harris, T., 48, Great Marlborough Street, W.
1865	Hendry, W. Hovenden, 43 *bis*, Rue de l'Oratoire, Champs Elysées, Paris.
1858	Hills, Gordon M., 12, John Street, Adelphi, W.C.
1848	Hodge, Henry, 7, Burleigh Terrace, Kentish Town, N.W.
1859	Houle, Josiah, 9, Guildford Street, Russell Square, W.C.
1865	Hudson, John, 40, Leman Street, E.C.
1863	Hughes, E., 78, Cambridge Street, Pimlico, S.W.
1862	Hughes, F. P., Bombay.

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1866	Ingram, Robert S., 1, Westminster Chambers, Victoria Street, S.W.
1865	Innocent, Charles J., Sheffield.
1858	Isaacs, Lewis H., 3, Verulam Buildings, Gray's Inn, W.C.
1854	James, Joseph, 2, Circus Place, Finsbury Circus, E.C.
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1866	Jarvis, Henry, Jun., 29, Trinity Square, Southwark, S.E.
1863	Joseph, N. S., 27a, Bucklersbury, E.C.
1864	Jowers, Alfred, 15, St. George's Road, Kilburn, N.W.
1859	Judge, Frederick, 36, Grafton Road, Upper Holloway, N.
1848	Judge, George, Jun., 5, Frederick Place, Gray's Inn Road, W.C.
1860	Keeling, E. Bassett, 1, Verulam Buildings, Gray's Inn, W.C.
1862	Keirle, Robert, 28, Notting Hill Terrace, W.
1847	Kelly, E. J., 23, Thavies Inn, E.C.
1860	Kempson, Frederick R., 34, Castle Street, Hereford.
1862	King, C. R. B., 24, University Street, W.C.
1859	Knight, Charles J., 14, Argyll Street, W.
1853	Knowles, J. T., Jun., 1, Raymond Buildings, Gray's Inn, W.C.
1864	Lee, Charles Williams, 3, Whitehall Place, S.W.
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1865	Lees, William H., 54, Church Street, Camberwell, S.
1859	Legg, Henry S., 32, Bedford Row, W.C.
1866	Lemon, James, Borough Surveyor, Southampton.
1866	Leuchars, Edgar, Mill Lodge, Barnes, S.W.
1861	Long, Cæsar A., 98, Bishopsgate Street, City, E.C.
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1864	Luff, Henry Geo., 3, Elm Road, Camden Square, N.W.
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1863	Masey, P. E., 61, Mornington Road, N.W.
1865	Mathews, Joseph Douglass, 10, Cloak Lane, City, E.C.
1853	Mathews, Joshua Dewer, 15, Belgrave Terrace, Lee, Blackheath, S.E.
1859	Metcalfe, John Henry, 35, Great James Street, Bedford Row, W.C.
1859	Mew, F., 30, Doughty Street, W.C.
1839	Meyer, Thomas, 20, Dock Street, Newport, Monmouthshire.
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1863	Newton, John, 7, Salisbury Street, Strand, W.C.
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1855	Nicholson, R., 7, Savile Terrace, Halifax, Yorkshire.

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1861	Oakley, William, 61, Doughty Street, W.C.
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1849	Pope, R. P., 8, King's Road, Bedford Row, W.C.
1866	Porter, Thomas, 1, Westminster Chambers, Victoria Street, S.W.
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1845	Randall, N. T., 28, Great Winchester Street, City, E.C.
1865	Redford, James, 1, St. Peter's Square, Manchester.
1845	Reed, W. C., 2, Adelaide Place, London Bridge, E.C.
1854	Rickman, T. M., F.S.A., 25, Keppel Street, Russell Square, W.C.
1863	Ridge, Lacy W., 23, Bedford Row, W.C.
1852	Roe, William, 22, Buckingham Street, Adelphi, W.C.
1863	Roper, F. W., 7, South Street, Thurloe Square, Brompton, S.W.
1850	Rushforth, T. H., Carlton Chambers, 12, Regent Street, S.W.
1853	Salter, Stephen, Jun., 28, Woburn Place, Russell Square, W.C.
1856	Saunders, George, 15, Hammersmith Terrace, Hammersmith, W.
1864	Scappa, G. A., 75, Gloucester Place, Portman Square, W.
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1861	Spiers, Richard Phèné, 14, St. Giles's Street, Oxford.
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1864	Stone, Frederick, Guildhall Chambers, Bristol.
1861	Strong, Alfred, 43, Lincoln's Inn Fields, W.C.
1853	Suter, Richard G., 46a, Regency Square, Brighton.
1862	Swansborough, Edward, 6, Great James Street, Bedford Row, W.C.
1862	Tabberer, Benjamin, 4, Vicarage Gardens, Campden Hill, Kensington. W.
1855	Tarn, Edward W., 34, Mecklenburgh Square, W.C.
1865	Tarver, Edward J., 1, Trinity Place, Charing Cross, S.W.
1861	Thomas, Robert G., Gresham Place, Adelaide, South Australia.
1863	Thompson, A. Hill, 29, Victoria Chambers, Leeds.
1864	Thomson, John J., 3, St. James' Square; and 13, Hobury Street, Chelsea, S.W.

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1854	Tracy, S. W., Great Marlborough Street, W.C.
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1851	Warton, M., Royal Exchange Assurance Office, Cornhill, E.C.
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1863	Willcox, W. J., 1, Belmont, Bath.
1838	Williams, Herbert, 52, Old Broad Street, City, E.C.
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1854	Willson, T. J., 126, Marylebone Road, N.W.
1856	Wilson, F. R., Alnwick, Northumberland.
1860	Winstanley, Herbert, 10, Basinghall Street, E.C.
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1860	Young, John, 80, Guildford Street, Russell Square, W.C.

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Stephens, C. W., 12, John Street, Adelphi, W.C.
Style, Arthur J., Thames Ditton.
Wood, C. R., 4, Trafalgar Square, W.C.

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BOOKS, PAMPHLETS, &c.

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Shoppee, C. J., Associate. Le Tailleur sincère, contenant ce qu'il faut observer pour bien tracer, couper, et assembler toutes les principales pièces qui se font dans la profession de Tailleur, by Le Sieur B. Boullay. 8vo. Paris, 1671.—M. Vitruvio Pollion de Architectura, dividido en diez libros, traduzidos de Latin en Castellano por M. de Urrea. 4to. Alcala, 1582.

Silva, Da, The Chevalier, Honorary and Corresponding Member. Jornal dos Architectos Portuguezes e Archæologos, Lisbon: Archivo de Architectura Civil. Folio. Lisbon, 1865.—Descripçao artistica das novas salas do real Palacio d'Ajuda. Pamphlet, 8vo. Lisbon, 1865.

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Société Centrale des Architectes (La) Paris. Bulletins de la Société. Paris, 1864.

Société Libre des Beaux Arts (The). Annales. Vol. XXII, for January, February, and March, 1865. 8vo. Paris, 1865.

Stanley, W. F. A Descriptive Treatise on Mathematical Instruments. 8vo. London, 1866.

Thomson, J. J., Associate. Improvement of Land Act, 1864. Folio. London, 1864.—Notes Explanatory of the Objects and Machinery of the Act. 8vo. London, 1864.

Tracy, S. W., Associate. Nuovo Pianti degli scavi de Pompei. Map in case.

Trélat, Emile. Ecole Centrale de l'Architecture, Paris: Régime et Programmes des Conditions et de l'Enseignement, 1864-65. Pamphlet, 8vo. Paris, 1864-65.—Séance d'Ouverture, 10 Novembre, 1865.—Régime et Programme de l'Enseignement, Novembre, 1865.—Programme des Conditions relatives à l'admission des élèves en 1866. Pamphlet, 8vo. Paris, 1866.

TROLLOPE, The Rev. E., M.A. Reports and Proceedings read at the Meetings of the Architectural Societies of York, Lincoln, Northampton, Bedford, Worcester, and Leicester, during the Year 1864. Vol. VII, Part 2. 8vo.

TRUSTEES OF THE LATE SIR JOHN SOANE'S MUSEUM (The). A general description of Sir John Soane's Museum, by G. Bailey. Pamphlet, 8vo. London.

TWINING, H. Elements of Picturesque Scenery, or Descriptions of Nature, intended for Students, with a view to Improvement in Landscape Painting, by H. Twining. Vol. III, Part I. 8vo. London, 1865.

VOGÜÉ, Le Comte Melchior de, Honorary and Corresponding Member. Le Temple de Jerusalem Monographie du Haram Ech-chérif. Letterpress, &c. Folio. Paris, 1864.

WARDELL, W. W., Fellow. Reports of the Mining Surveyors and Registrars of Victoria for the Quarters ending 31st December, 1864, and 31st March, 1865. Folio. Melbourne, 1865.—Mineral Statistics for 1864. Folio.

WARE, M., Jun. Handy Book of Sanitary Law. Pamphlet, 12mo. 1866.

WILTSHIRE ARCHÆOLOGICAL AND NATURAL HISTORY SOCIETY (The). Magazine of the Society. Vol. IX, Nos. 26 and 27. 8vo. London and Devizes, 1865-66.

WYATT, M. Digby, Fellow. Exhibition of Industry of all Nations, 1851: Reports to the Crown. 1 Vol.—Reports of the Juries. 4 Vols.—Official Catalogue. 3 Vols.—List of Medals and Certificates. 1 Vol. 9 Vols. in all. Folio. London, 1851.

PROCEEDINGS AT THE ORDINARY AND OTHER GENERAL MEETINGS, PAPERS READ, &c.

From the 1st of May, 1865, to the 30th of April, 1866, inclusive.

1st *May*, 1865.—*Special General Meeting* and *Annual General Meeting.*

Special General Meeting.—The following Recommendations of the Council were adopted:—

"That Three Members be added to the Council in order to increase the number to Fifteen, the full number allowed by the Charter, and that the Bye-Laws be altered in accordance therewith."

Annual General Meeting.—The Annual Report was read and adopted.

The Balance Sheet of the Accounts having been read,

It was Resolved—"That the Accounts submitted be printed, as approved by the Auditors."

A list of Attendances at Council since the last Annual Meeting was laid on the table.

The Meeting proceeded to the Election of the President, Vice-Presidents, Honorary Secretaries, Ordinary Members of Council and other Officers, for the ensuing twelve months.

Examiners, under the Metropolitan Building Act, 1855, were elected for the ensuing twelve months.

Thanks were voted to the President, Vice-Presidents, and Office Bearers for the past twelve months.

15*th May.*—*Ordinary General Meeting.*—The decease of T. Willoughby, of 11A, Cunningham Place, St. John's Wood, Fellow, was announced.

The President read a letter, dated 13th May, 1865, from the Hon. Secretary of the proposed Art Exhibition in aid of the Funds for completing the erection of the Wedgwood Memorial Institute at Burslem, and announced that the Exhibition would be held during the months of July, August, and September, at Alton Towers, in Staffordshire, the Seat of the Earl of Shrewsbury.

A short Memoir of the late J. Davies, of Woodford, Essex, Fellow, was read by T. L. Donaldson, Past-President.

Paper read: "An Enquiry into some of the Conditions affecting the Study of Architecture in our Schools." By John Ruskin, Esq.

29*th May.*—*Ordinary General Meeting.*—The President stated that the question of the Art Exhibition at Alton Towers had been formally brought before the Council, and that the Hon. Secretaries and the Hon. Secretary for Foreign Correspondence had undertaken to act as a Sub-Committee to receive offers from Members of Drawings for that Exhibition, which would be opened on the 5th July next.

The President also mentioned the subject of the Universal Exhibition to be held in Paris in 1867, and stated that a Royal Commission had been formed, of which he, the President, had been appointed a Member; and that further details would be, from time to time, laid before the Members.

It was announced that the Ecclesiological Society had, through the President, placed at the disposal of the Institute a large number of volumes, from which a selection of such works as were not in the possession of the Institute might be made, as an addition to the Library.

The Royal Gold Medal, awarded at the Special General Meeting on the 6th March, 1865, was presented to James Pennethorne, of 7, Whitehall Yard, Fellow, by the President.

The Discussion on Mr. G. R. Burnell's Paper "On the present Tendencies of Architecture, and of Architectural Teaching in France," read at the Ordinary General Meeting on the 24th April, 1865, was resumed and concluded.

12th June.—Ordinary General Meeting.—The decease of William Lightly, of 16, Furnival's Inn, Fellow, and of William Fotheringham, of 2, Queen's Terrace, Holloway, Associate, was announced.

The decease of Sir Joseph Paxton was also announced.

The President announced that T. Hayter Lewis, Vice-President, had been appointed Professor of Architecture at University College, London, in the room of T. L. Donaldson, Past-President of this Institute, who had retired, after filling that office for twenty-three years.

Paper read: "A short Description of the Manchester Assize Courts." By Alfred Waterhouse, Fellow.

26th June.—Closing Ordinary General Meeting.—The Chairman announced that the remaining Discourses to Students preparing for the Voluntary Architectural Examination, would be delivered at the Rooms of the Institute as under:—

Monday, July 3.—On Construction—by Professor R. Kerr, Fellow.
10.—Chemistry—by J. Bell, Fellow.
17.—Geology—by T. Hayter Lewis, Vice-President.
24. { Practical application of Mathematics—by F. C. Penrose, M.A., Fellow.
Perspective and Color—by J. W. Papworth, Fellow.
31.—Resumé—by A. Ashpitel, F.S.A., Fellow.

Paper read: "Some Account of the Alterations and New Buildings at the Guildhall, City of London." By Horace Jones, Fellow.

Mr. J. H. Parker, Hon. Member, gave an Account of Investigations and Architectural Discoveries recently made by him at Rome, and at Caen in Normandy.

6th November.—Opening Ordinary General Meeting of the Session 1865–66.—The decease of George J. Morant, of Richmond House, Hayling, Havant, late Contributing Visitor, was announced.

The Hon. Secretary announced a Special Donation from the Ecclesiological Society of about one hundred and twenty works, and eight volumes of sketches of buildings and details, rubbings of brasses, various tracings, &c., presented through the President.

The President, A. J. B. Beresford-Hope, M.P., delivered an opening Address.

20th November.—Second Ordinary General Meeting.—The Chairman stated that it had been proposed by the President and Council that a Committee be appointed, composed (with power to add to their number) of the Council, Ten Members of the Institute, and Two Representatives from such of the following Societies as should be willing to join, viz.:—The Architectural Association, the Architectural Museum, the Architectural Exhibition, and the Ecclesiological Society,—the Committee to be entitled "The Paris Exhibition Architectural Committee for the purpose of promoting the satisfactory representation of British Architecture, and of the Arts cognate to Architecture as practised in this Kingdom, in the Paris Universal Exhibition of 1867, under whatsoever group of that Exhibition as classified by the French Authorities the respective subjects may occur,—and that the Committee be requested to communicate with the British Commissioners for the Exhibition with this Institute, and with all other bodies and persons it may think important for the furtherance of its object."

Paper read: "On Iron-work,—its legitimate use and proper treatment." By William White, F.S.A., Fellow.

4th December.—Third Ordinary General Meeting.—The decease of M. Sulpice Boisserée, of Bonn, Hon. and Corresponding Member, was announced.

The President stated, on the subject of the Paris Universal Exhibition of 1867, that in accordance with the request of the Council, he had written to Earl Granville, who was at the head of the English Commission under H. R. H. the Prince of Wales, informing his Lordship of the nature of the Committee which it was proposed to form, and that he had received a reply from Mr. Henry Cole, C.B., as representing the Lord President, stating that the communication would be laid before the Royal Commissioners at their next Meeting.

The Chairman announced that Six Candidates had sent in their applications in accordance with the regulations for conducting the Voluntary Architectural Examination in January, 1866, viz.:—

In the Class of Proficiency - - - - -	5
" " Distinction - - - - -	1
Total - - - -	6

The following Gentlemen were nominated Examiners and Moderators for the Voluntary Architectural Examination of 1866.

As Examiners—Messrs. A. Ashpitel, T. Hayter Lewis, V.P., and J. W. Papworth, Fellows.

As Moderators—Messrs. C. Fowler, Jun., and T. Roger Smith, Fellow.

Paper read: "On Art Foliage." By J. K. Colling, Fellow.

18*th December*, 1865.—*Fourth Ordinary General Meeting.*—The decease of Captain Francis Fowke, C.E., was announced.

Paper read: "On Painting in connection with Architecture." By T. Gambier Parry, Honorary Member.

15*th January*, 1866.—*Fifth Ordinary General Meeting.*—The decease of Sir Charles Lock Eastlake, President of the Royal Academy, was announced.

The following Gentleman was elected one of the Examiners for the Voluntary Architectural Examination 1866, in the room of T. Hayter Lewis, Vice-President, whose duties as Professor of Architecture at University College, London, would prevent his acceptance of the office, viz.:—Edwin Nash, of 5, Adelaide Place, London Bridge, Fellow.

The President presented to Thomas L. Donaldson, Past-President, Emeritus Professor of Architecture at University College, London, a Gold Medal bearing his portrait, struck at the instance of his professional brethren, to commemorate his eminent and zealous services in promoting the study of Architecture.

It was announced that a silver impression of the same medal would be given to Students in Architecture annually, or at such other intervals of time as might hereafter be determined.

Paper read: "Suggestions respecting the Roofs of the Hypæthral Temples at Bassæ and Ægina." By John W. Papworth, Fellow.

29*th January*.—*Sixth Ordinary General Meeting.*—The decease of George Petrie, LL.D., of 7, Charlemont Place, Dublin, Honorary Member; and of J. Offermann, of Mayence, Honorary and Corresponding Member, was announced.

The President read the following Resolution of Council, passed on the 22nd January, 1866:—

Resolved:—That the friends of Thomas L. Donaldson, Past-President of this Institute, having subscribed to institute a Medal in commemoration of his retirement, after having, with indefatigable zeal and high ability, filled the office of Professor of Architecture at University College, London, for twenty-three years, and having invited the Council to settle its appropriation,—The Council of the Royal Institute of British Architects do hereafter retain the control of the Medal to be given annually by them, to be competed for by the Students of Architecture at University College, London, at the disposition of the Professor of that class.

The President announced the recommendation of the Council that, subject to Her Majesty's gracious sanction, the Royal Gold Medal for 1865 be awarded to William Butterfield, Esq., of 4, Adam Street, Adelphi, at the Special General Meeting of Members to be held on Monday, the 5th March, 1866.

Resolved :—That the best thanks of this Institute be given to Mr. Wyatt Papworth for his valuable services in the re-arrangement of the Library, and the preparation of the Catalogue.

Papers read : "An Account of the Restoration of the Dutch Church, Austin Friars, principally from Notes by the late William Lightly, Fellow;" "Notes on a Visit to the Auvergne Churches." By Edward I'Anson, Fellow.

12th February.—Seventh Ordinary General Meeting.—The decease of John Gibson, Esq., R.A., was announced.

Mr. T. L. Donaldson, Past-President, placed on the table the Programme of the Regulations, &c., of the International Archæological Congress to be held at Antwerp from the 12th to the 21st of August next, and expressed a hope that this Institute would be worthily represented on so important an occasion.

The result of the Voluntary Architectural Examination for 1866 was announced, with the names of the successful Candidates in the Classes of Proficiency and Distinction, and the Reports of the Examiners and Moderators to the Honorary Secretaries and the Council.

The Chairman announced that the Election for the Pugin Travelling Studentship of 1866 had been decided by the Council in favour of Mr. Hubert J. Austin, of 14, Pembridge Villas, Bayswater.

Paper read : "The Cathedral of St. Canice and other Architectural Antiquities, Kilkenny, Ireland." By T. Newenham Deane, Fellow.

26th February, 1866.—Eighth Ordinary General Meeting.—The decease of George Jonas Wigley, formerly Associate, was announced.

The President announced that a Meeting of the Commissioners for the Paris Exhibition of 1867 had taken place on the Monday previous, under the presidency of H. R. H. The Prince of Wales, and that the result of subsequent communications with Mr. H. Cole, C.B., had been, that they were advised to apply for a considerable amount of space in Classes 4 and 65 of Architectural Designs and Drawings and Manufactured Articles, on a scale analogous to the English International Exhibition of 1862. The Chairman added, that all the cognate Societies had expressed their readiness to co-operate with the Committee appointed by the Institute for carrying out these objects.

The President read the following announcement:—

"We, the undersigned Fellows of the Royal Institute of British Architects, hereby desire to substitute the name of Matthew Digby Wyatt, Fellow, in lieu of the name of William Butterfield, as that of the person to be recommended to Her Majesty for the Royal Gold Medal for 1865."

Dated the 16th day of February, 1866.

(Signed) Owen Jones, Proposer.
John W. Papworth, Seconder.

To the Hon. Secretaries
of the Royal Institute
of British Architects.

The Report of the Committee appointed to examine the Drawings for the Medals and Prizes of the Institute, the Soane Medallion, and the other Prizes, was laid on the table.

Paper read by the Honorary Secretary, C. F. Hayward : "On the Church of St. Stephen, or 'The Abbaye aux Hommes' at Caen." By J. H. Parker, Honorary Member.

5th March.—Special General Meeting.—The President announced that he had received a letter from Mr. Butterfield, stating his wish that his name should be withdrawn as a Candidate for the

Royal Gold Medal 1865, and that the Council had recommended that the Royal Medal be awarded, subject to Her Majesty's gracious sanction, to Matthew Digby Wyatt, F.S.A., of 37, Tavistock Place, Tavistock Square, Fellow.

It was then Resolved—"That it be humbly submitted for Her Majesty's gracious consideration that the Royal Gold Medal for the year 1865 be awarded to Matthew Digby Wyatt, F.S.A., Fellow."

The following Notice of Motion to be made at the Annual General Meeting on Monday, the 7th May next, by W. Tite, M.P., Past-President, was read:—

"That the Council be requested to take into consideration the principles or rules to be adopted in recommending the Gold Medal, and as to the order of the recommendation of English or Foreign Architects or Men of Science, not being Professional Architects, and that the Council do report on this subject at the Opening Meeting in November."

The Report of the Council as to the award of the Medals and Prizes of the Institute, the Soane Medallion, and the Special Prizes, was read, approved, and adopted.

The Subjects for Medals and Prizes for the present year were then considered and agreed to.

12th March.—Ninth Ordinary General Meeting.—The decease of Dr. Whewell, Master of Trinity College, Cambridge, Honorary Member, was announced; and a Memoir of Dr. Whewell, by the President, A. J. B. Beresford-Hope, M.P., was read from the Chair.

A Petition to the House of Commons on the subject of the Competition for Rebuilding the National Gallery, urging the desirability of the Competition being enlarged, and praying that a greater number of Architects than those already selected be invited to compete, was read, approved, sealed with the Corporate Seal of the Institute, and ordered to be forwarded to the President for presentation.

Her Majesty's sanction to the award of the Royal Gold Medal for 1865 to M. Digby Wyatt, F.S.A., Fellow, was announced.

The Chairman announced that the Paris Exhibition Committee had met on the 10th instant, when a Sub-Committee was appointed to confer with Mr. H. Cole, C.B., on the details of the Exhibition with regard to the English Architectural Department,—that the above-named interview had since taken place, enabling the Sub-Committee to report to the General Committee on the 17th instant. That as regards Group I., Fine Art Class IV., it would be necessary for the Commissioners to meet and appoint the Committee to act as their advisers, and to request it to take charge of the Architectural Department of the Exhibition before any definite action could be taken by the Committee in the matter, and that Drawings would probably not be required till November or December next.

With regard to the other Groups, it was arranged that a certain space should be allotted to the Committee in Group III., where it could exhibit (but only as a body of Associated Exhibitors) Articles of Furniture and other Manufactures connected with Architecture. A Sub-Committee was nominated to carry out the arrangements in connection with this department of the Exhibition.

Copies of the Plan of the Paris Exhibition Building were laid on the table.

Paper read: "On the Water Supply of Ancient and Modern Rome." By the Rev. Richard Burgess, B.D., Honorary Member.

26th March.—Tenth Ordinary General Meeting.—The decease of Dr. Spurgin, Visitor, was announced.

The President stated that the Paris Exhibition Architectural Committee had had an interview with Mr. Henry Cole, C.B., who had assured them and the other societies associated with them, that as soon as the arrangements were completed, the Committee would be the official body to be consulted as to the selection of the Drawings to be sent to Paris, an exhibition of which, it was suggested, should take place at Christmas, in the Gallery at South Kensington, now occupied by Historical Portraits, and which would then be temporarily vacant.

Paper read: "An Enquiry into certain Principles of Architectural Physiology." By D. O. Edwards, M.D.

16th April.—*Eleventh Ordinary General Meeting.*—The Chairman, C. C. Nelson, Vice-President, presented a copy in bronze of the Testimonial Medal lately presented to Professor Donaldson, Past-President, on his retirement from the Chair of Architecture, at University College, London, and stated that a copy of the same Medal in Silver would be placed in the hands of Professor T. Hayter Lewis, to be presented to the Students of Architecture, at University College.

Paper read: "On some Mediæval Ecclesiastical Buildings in Paris, and the principles observed in their restoration." By G. R. Burnell, F.S.A., Fellow.

30th April.—*Twelfth Ordinary General Meeting.*—The Royal Gold Medal for 1865, the Medals and Prizes of the Institute, and the Special Prizes, were presented us under:—

The Royal Gold Medal to M. Digby Wyatt, F.S.A., of 37, Tavistock Place, Tavistock Square, Fellow.

The Silver Medal of the Institute, with Five Guineas, to C. Henman, Jun., of 7, Bedford Place, Croydon.

The Silver Medal of the Institute to Arthur Baker, of 9, Inkermann Terrace, Kensington.

The late Sir Francis E. Scott's Prize of Ten Guineas to M. H. Renault Mangin, of 21, Nottingham Street, Regent's Park.

The Students' Prize in Books to J. Nightingale, of 42, Parliament Street, Student.

The President stated, with regard to the Paris Exhibition, that after much negotiation, a good understanding had been established with the authorities at South Kensington, and that Mr. H. Cole had placed at their disposal the Galleries at South Kensington now occupied as the Historical Portrait Gallery, for the purpose of a Winter Exhibition of Architectural Drawings.

Paper read: "The Evidence of Architects on the Obstruction of Ancient Lights, and the practice of proof by measurement, with reference to recent cases in the Courts of Equity." By Professor R. Kerr, Fellow.

The Discussion on the above Paper was adjourned to an intermediate Ordinary General Meeting to be held on Monday Evening, the 28th May.

Original Drawings, and other Illustrations of the Papers read, were exhibited at the Evening Meetings.

INSTITUTE:OF:BRITISH:ARCHITECTS
INST:ANNO:SALUTIS:MDCCCXXXVII
INCORP:VII:GUL:IV
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CATALOGUE

OF THE

PRINTED BOOKS AND MANUSCRIPTS

IN THE LIBRARY

OF THE

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

USUI CIVIUM, DECORI URBIUM.

LONDON:
PUBLISHED AT THE ROOMS OF THE INSTITUTE, 9, CONDUIT STREET, HANOVER SQUARE. W.

1865.

LONDON:
J. DAVY AND SONS, PRINTERS, 137, LONG ACRE.

THE LIBRARY of the Royal Institute of British Architects chiefly consists of books presented by the authors and others; but many standard works of reference have been purchased from time to time in order to render its contents more generally useful.

With the view of improving and increasing the collection, the Council forwarded to the Members in 1861, a list of such works, not in the Library, as were considered essential to its completeness; and the result has been the addition, as donations, of a large number of valuable books. The Catalogue annexed does not, however, contain the titles of many important publications enumerated in that list; works for which the new cases in the Library have been specially rendered capable of affording ample accommodation.

Catalogues of the Library were printed in 1838, and again in 1846. The one now issued contains all the publications presented and purchased up to the end of June 1864. It was prepared from the interleaved copy in daily use in the Library, in which the additions since 1846 have been periodically inserted. When the Rooms of the Institute were opened in the present locality in 1859, the contents of the cases were investigated, volume by volume, and checked by comparison with the Catalogue. At the same time, a reference to each work was made therein under the specific subject or subjects set forth in the title page. As this work has been effected by several hands, some want of uniformity may be observable; a defect which has been greatly remedied by a manuscript prepared for the printer having been revised as carefully as possible, as well as the proof sheets. It was deemed advisable to abridge the titles, preserving at the same time, sufficient to identify the work in request. The Catalogue as now issued is therefore a double one, combining in the same list, references to the books *under the name of the author,* and also to the books *under the subject matter.* It must not, however, be placed in comparison with works prepared by a professional staff acting under a remunerated supervision, as it is the labour of love of those whose time is otherwise much occupied; in its present form it is submitted for the candid criticism of the members, with the hope that the ready reference which it permits to the books, may lead the younger members to bestow more time to the valuable contents of the Library. For further facility of reference, in addition to this classification, the volumes have, to a certain extent, been arranged in the cases according to subjects.

The titles of nearly all, if not all, of the Papers read at the Ordinary Meetings of the Institute, have been inserted, and to designate them, the letters SP (Sessional Papers), have been appended to each entry. Some of them are further distinguished by the letters MS, to mark those Papers which have not been printed by the Institute, but of which the original manuscripts remain in the collection. Some of these Papers, with others read at the time the Institute did not print its Transactions, will be seen in the Journals of the period, as noted by the press mark in the Catalogue in use in the Library. The Council regrets that the collection of manuscripts is not complete, but it still trusts to recover some of those which are wanting. In many instances, the Illustrations prepared for those Papers remain in the possession of the Institute.

To obviate difficulty in consulting the Catalogue for works published by, or under the auspices of, Societies, it should be borne in mind that the Institutions in London have been arranged alphabetically by their title, to prevent too frequent recurrence of the heading **London.** But all other Societies have been placed under the name of the place in which they are established; the foreign Societies having a cross reference from their titles to their localities. The heading **London** includes the whole of the Metropolis.

An Addendum has been printed containing the donations up to the close of the Session in June 1865, together with that of a large number of works presented by the Committee of the Ecclesiological Society. This Addendum also includes a few corrections, which, with the best attention, have escaped observation; as well as the insertion of some works omitted in their proper places, noticed only during the revision of the later sheets.

The Librarian is engaged on the manuscript for a corresponding volume, to contain a list of the important collection of Original Drawings, Prints, Photographs, Medals, Busts, Casts, Marbles, Stones, etc. belonging to the Institute; these at present are only known to the Members by the lists printed with the annual Reports.

JOHN P. SEDDON, } *Honorary*
CHAS. FORSTER HAYWARD, } *Secretaries.*

October, 1865.

⁂ The Library is open to Members from ten to five daily, between the 20th of October and the 31st of August (excepting the Easter and Christmas weeks), and on the evenings of Monday, Thursday, and Friday, from seven to ten, during the same period.

Mr. W. Papworth's compliments to
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Augt. 25/64

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ROYAL

INSTITUTE OF BRITISH ARCHITECTS.

1864.

PRINTED BOOKS; MANUSCRIPTS; AND SESSIONAL PAPERS; IN THE LIBRARY.

Abbadie (A d') Journey to Kaffa; *see* **Beke (C T).** 1851

Abbate (G) Decorative painting of Pompeii; *see* **Wyatt (M D).** SP. 1853

Abbey Churches
by E. Sharpe. 2 vols. 1848
Mouldings, etc. supplement to architectural parallels, by E. Sharpe. 1848

Abbey Dore Church, near Hereford, by J. Clayton. SP. 1851

A'Beckett (T) Life of; by J. W. Warter. 1853

About (E) Nouvelle carte d'Europe. pamph. 8o. *Paris* 1860

Abraham (R) Concrete used at Westminster New Bridewell. SP. 18 Jan. 1836

Abury Illustrated, by W. Long. 1858

Académie Royale de Belgique *see* **Brussels.**

Académie Royale de Peinture et de Sculpture *see* **Paris.**

Académie des Beaux Arts de l'Institut *see* **Paris.**

Academies etc. Essay on; by A. W. Hakewill. MS. 1834

Acadian Charcoal Iron Company [Limited] Quality of the iron for the purposes of cannon. pamph. 8o. *Lond.* 1859

Accademia di San Luca *see* **Rome.**

Ackermann (R) Selection of ornaments. parts i and ii only. fo. *Lond.* 1819

Acoustics *see* **Sound.**

Actuaries *see* **Institute of Actuaries.**

Adam (R) Palace of Diocletian at Spalatro. fo. *Lond.* 1764

Adam (R and J) Works in architecture. 2 vols. fo. *Lond.*1773-79

Adam (W) Vitruvius Scoticus; Plans, etc. of public buildings and houses in Scotland, principally by W. Adam. fo. *Edin. & Lond.* [1720-40: 1810]

Adams (G) Geometrical and graphical essays; a description of mathematical instruments. 8o. *Lond.* 1791

Addams (R) Strength of beams to resist pressure and impact. MS. 4o. 1831

Addington (H) Abbey church of St. Peter and St. Paul at Dorchester, Oxfordshire. 8o. *Oxford* 1845

Addison (C G) Law of contracts. 5th edit. 8o. *Lond.* 1862

Adel Church near Leeds; Norman roof of; by R. D. Chantrell. MS. SP. 1847

Adelaide
South Australian Association of Architects, Engineers and Surveyors Rules. pamph. 8o.*Adelaide* 1858

Ægina The temple at; by C. R. Cockerell. 1860

Æsthetic Principle in decoration, by J. W. Papworth. SP. 1862

Africa Memoir regarding Bruce's journies and drawings, by C. L. C. Bruce. pamph. SP. 1837

Agnew (H C) Evidence of the practical application of the quadrature of the circle in the configuration of the great pyramids of Gizeh. 4o. *Lond.* 1838

Agra Buildings at; by J. Noble. MS. SP. 1846

Agricola (G) Epitome, *see* **Vitruvius.** 1552

Agriculture by M. J. Varro, translated by J. Owen. 1800

Agrigentum Notes on the remains of; by S. Angell. MS. SP. 1845

Aikin (E) Modern architecture; *see* **London Architectural Society.** 1808

Ainger (A) The building act with notes and cases. 8o. *Lond.* 1836

Ainsley (S J) Local antiquities of Etruria. SP. 20 May 1844

Ainsworth (R) Latin dictionary; an abridgement by T. Morell, improved by J. Carey. 8o. *Lond.* 1852

Ainsworth (W F) Topography of Nineveh. pamph. 8o. 1850

Aitchison Jun. (G)
Color as applied to architecture. SP. 14 Dec. 1857
Iron as a building material. SP. 29 Feb. 1864

Albania
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Young (C D) and Co Illustrations of iron structures for home and abroad. pamph. fo. *Edin.* ——

Young (J R) Arithmetic for the use of schools. 12o. *Lond.* 1857

Yucatan

Ancient monuments in; by F. Catherwood. 1844

—————— by F. Waldeck. 1838

Travels in; by J. L. Stephens. 1841 : 1843

Z.

Zabaglia (N) *see* **Fontana (D)** 1743

Zahn (W) Ornamente aller classischen kunstepochen. fo. 1831

Zanth (L de)
La Wilhelma, villa Mauresque de le roi de Wurtemberg. fo. *Paris* 1855
Memoir of; by T. L. Donaldson. SP. 1857
Sicile moderne, by J. I. Hittorff and L. de Zanth. 1835

Zeitschrift für bauwesen, by C. Hoffmann. 4o. *Berlin* 1851

Zessos (...) *see* **Bauer.** 1846

Ziegler (J) Etudes céramiques. Recherche des principes du beau dans l'architecture, et la forme en général, théorie de la coloration des reliefs. Text 8o. plates fo. *Paris* 1850

Zinc
Its employment, by C. F. Schinkel. MS. 1840
Use of; in roofs, by J. Edmeston. SP. 1860
Vieille Montagne Zinc Mining Company, pattern book. 1844

Zopissa process, by N. C. Szerelmey. 1861

Zoppino *see* **Vitruvius.** 1535

CORRECTIONS.

(SOME OTHERS ARE INCLUDED IN THE FOLLOWING ADDENDUM.)

Baillie ( )	2nd line,		*insert* MS.
Bridges	9th „		„ 1757.
Campanari	4th „	*for* 1873,	*read* 1837.
Dyer (C)			*insert* by J. H. Dyer.
Eastlake (C L)			*read* **Eastlake (Sir C L).**
Fontaine (A P L)			„ **Fontaine (P F L).**
Hunter (J)	2nd line,		*insert* MS.
Journet (P)	7th „		„ MS.

ADDENDUM,

Containing the Donations during the Session 1864-1865; together with the works presented by the Committee of the Ecclesiological Society, Nov. 6, 1865. Some Omissions in the Catalogue are also introduced.

NOTE.—The numbers of the Monthly and Weekly Journals, the Proceedings and Journals of Societies, and the parts of Works in progress, are not inserted, as they are continuations of those already named in the Catalogue

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A.

Ackermann (R)
History of Westminster Abbey. Illustrations only. fo. [*Lond.* 1812]
Ahmedabad India.
Mahomedan buildings at; by M. D. Wyatt. SP. 1865
Aleandri (I J)
Sferisterio eretto nella città di Macerata. fo. *Firenze* 1828
Algarkirke Lincolnshire.
Description, etc. of church. pamph. 8o. ——
Allen (C B)
Proposal for establishing in the Metropolis a school of art for artist workmen. pamph. fo. ——
School of art for art artizans, and museum of architectural art, Canon Row. pamph. fo. ——
Allason (T)
Columns of the Athenian temples. From the Quarterly Journal. 8o. *Lond.* 1820
Altars
History of christian; by the Ecclesiogical Society. ——
Amateur (An)
Enquiry into the different styles observable in ancient glass painting (by C. Winston). 2 parts. 8o. *Oxford* 1847
America *see* **United States of America.**
Ani Armenia.
Description of church at; by T. L. Donaldson. SP. 1843
Anonymous
Church of St. Mary, Stafford. Proposed alterations. Lithographed. 4o. ——
Complete works, with original memoir and anecdotes, of Sir J. Reynolds. Vols. ii and iii only. 12o. *Lond.* 1824
Constitution and canons of the church of England. 8o. *Oxford* 1825
Considerations of the principles of church arrangements, by a member of a Diocesan Architectural Society. pamph. 8o. *Lond.* ——
Design for new town hall buildings, Chester. Motto. "Love's Labour." pamph. 8o. *Lond.* 1864

Anonymous—*continued.*
Grand pont suspendu en fil de fer à Fribourg. 4o. *Frib.* 1839
Letters from Italy and Vienna. 8o. *Camb.* 1852
Life and Times of Thomas à Beckett. From the Church of England Quarterly Review. pamph. 8o. *Lond.* 1841
Method of forming a foundation for a stone bridge by means of inverted groin arches, on a sandy or soft soil, etc. MS. ——
Mosaic geology; being commentaries on the first and second chapters of Genesis. 12o. ——
New Palace of Westminster. 12th edit. pamph. 8o. *Lond.* 1856
Not a strike, but a feud! with suggestions for its immediate termination. 8o. *Lond.* 1859
Notice historique des peintures et des sculptures du palais de Versailles. 8o. *Paris* 1837
Order of procession at the laying of the foundation stone of the church of St. Matthew, Cambridge. pamph. 8o. 1864
———— Report of the proceedings. pamph. 8o. *Camb.* 1864
Ornaments of churches considered, with a particular view to the late decoration of the parish church of St. Margaret, Westminster. [C. Wilson.] 4o. *Oxford* 1761
Persepolis illustrata; or, the ancient and royal palace. fo. *Lond.* 1739
Scenes and impressions in Egypt and Italy, by the author of "Sketches in India," etc. 3rd edit. 8o. *Lond.* 1825
Sur la nécessité de mettre au concours le monument Napoléon. pamph. 8o. *Paris* 1840
Treatise on painting, by L. da Vinci, translated from the Italian, with life of the author. 8o. *Lond.* 1796
Views in Rome. Plates. fo. *Roma* 1773
Antiquatis Historicæ Studiosus
Sketch of life of J. Milton. pamph. 8o. *Lond.* 1862
Antiquities
Ecclesiastical; practical study of; by Cambridge Camden Society. 1839-43

Antwerp
- Le triumphe de l'Anvers, by C. Grapheus. 1549
- *see* **Amsterdam Maatschappij tot Bevordering der Bouwkunst.**

Archæological Institute of Great Britain and Ireland
- Archæological Journal. Nos. 29 to 83. 8o. *Lond.* 1851-64
- Archæologist and Journal of Antiquarian Science. Vol. i. 8o. *Lond.* 1842

Architects
- Annuaire de l'architecte, by A. Lance. 1864
- *see* **Superintendents.**

Architecture
- Architectural education. Report by I.B.A. SP. 1865
- Examination papers in; by W. J. Beamont. 1865
- Influence des femmes sur; by C. Daly. 1864
- Marveilles de; by A. Lefèvre. 1865
- Newleafe discourses on the fine art; by R. Kerr. 1846
- Parallel of the orders of; by C. Normand and A. Pugin. 1829
- Present tendencies of architectural education in France, by G. R. Burnell. SP. 1865
- Study of; in our schools, by J. Ruskin. SP. 1865
- ——— *see* **Wolff (J H).**
- Synopsis of; by C. E. Papendiek. 1826
- Traité; by L. Reynaud. 1850

Architectural Museum
- Annual reports. pamph. 8o. 1858; 1860
- Prospectus. pamph. 8o. *Lond.* 1856

Architectural Society
- *see* **Architectural Association.**
- *see* **Bristol.**
- *see* **College of the Freemasons of the Church.**
- *see* **Dublin.**
- *see* **Edinburgh.**
- *see* **Institute of British Architects.**
- *see* **Melbourne.**
- *see* **Northern Architectural Association.**
- *see* **Oxford.**

Art Union of London
- Report. pamph. 8o. *Lond.* 1864
- Report of the council, with list of members. pamph. 8o. *Lond.* 1864

Arundel Sussex.
- History and antiquities of the castle and town; by M. A. Tierney. 1834

Arundel Society
- Notices of sculpture in ivory, by M. D. Wyatt. 4o. *Lond.* 1856

Ashpitel (A)
- Newstead Abbey, by T. J. Pettigrew. ——

Association for the Promotion of Improved Paving, Cleansing, and Drainage
- Annual report, with appendix. pamph. 8o. *Lond.* 1845

Athens
- L'Acropole d'Athènes, by E. Beulé. 1853

Auvray (L) *see* **Revue Artistique et Littéraire.** 1865

B.

Baeumer (W)
- Das bürgerliche wohnhaus bei den Griechen und Römern im deutschen mittelalter im XVI, XVII, XVIII, und XIX jahrhundert. 4o. *Stutt.* 1862

Bailly (...) *see* **Donaldson (T L).** 1863

Bannatyne Club
- Registrum de Dunfermelyn liber cartarum abbatie Benedictine S.S. Trinitatis et B. Margarite regine de Dunfermelyn. Edited by C. Innes. 4o. *Edinb.* 1842
- Registrum episcopatus Glasguensis. Munimenta ecclesie metropolitane Glasguensis a sede restaurata seculo ineunte xii ad reformatam religionem. Edited by C. Innes. 2 vols. 4o. *Edinb.* 1843

Bartholomew (A)
- Hints relative to construction of fire-proof buildings. pamph. 8o. *Lond.* 1839

Bartlet (Mrs S) *see* **F M Tosi and A Becchio.** 1842

Batty (R E)
- Some particulars connected with the history of baptismal fonts. pamph. 8o. *Aylesbury and Lond.* 1848

Beamont (W J)
- Fine art as a branch of academic study. pamph. 8o. *Camb.* 1863
- Specimens of examination papers in architecture, painting and sculpture. pamph. 8o. *Camb.* 1865

Becket (Thomas à)
- Life and times of. Anonymous. 1841

Bell (W)
- Alterthümliches wortregister der baukünst. From "Glossary of Architecture," by J. H. Parker. With condensed translation of introduction to a "History of Church Architecture," by W. Lübke. pamph. 8o. *Lond. and Leip.* 1855

Benhams ( ) and Froud ( ) Trade list; coppersmith, brass and zinc works. 4o. *Lond.* ——

Berlin
- **Konigl. Technischen Deputation für Gewerbe**
- Vorbilder für fabrikanten und handwerker. Text 4o. plates 2 vols. fo. *Berl.* 1821-37
- Vorlegeblätter für baumeister. Text 4o. plates fo. *Berlin* 1844
- ——— für maurer. Text fo. plates fo. *Berlin* 1830

Berlin—*continued.*
Vorlegeblätter für maurer und zimmerlente, by G. Stier. 1841
———— für zimmerlente. Text fo. plates fo. *Berlin* 1827

Beulé (E)
L'Acropole d'Athènes. Vol. i. 4o. *Paris* 1853
Études sur le Péloponèse. 8o. *Paris* 1855

Billing (A)
Mural painting, and the decorations of churches generally. From the Architect's Journal. pamph. 8o. *Lond.* 1851

Binzer (A de)
Cathédrale de Cologne, ou description de ce monument d'architecture Germanique du moyen age. Translated from the German by...Adler-Mesnard. 4o. *Col. and Paris* ——

Bishop (W E)
Views of churches in the hundred of Hoxne, Suffolk. 4o. *Harleston* 1833

Blouet (G A)
Penitentiary houses. *see* **Bailey (G).** 1844

Boëtius
Tombe et épitaphe de; by H. Révoil. 1864

Bordeaux (R)
Traité de la réparation des églises principes de d'archéologie pratique. 8o. *Evreux* 1862

Boult (J)
Alleged submarine forests on the shores of Liverpool Bay and the River Mersey. pamph. 8o. *Liverp.* 1865

Boutell (C)
Monumental brasses and slabs. An historical notice of the incised memorials of the middle ages. Large paper copy, india proofs. fo. *Lond.* 1847-48

Boxgrove Sussex.
Priory church of S.S. Mary and Blaise; by L. W. Ridge. 1864

Brace ( ) *see* **Serpentine.** MS. SP. 1853

Brès ( ) *see* **Normand (L M).** [1830]

Bricks
Introduction of coloured; in elevations, by H. A. Darbishire. SP. 1865

Bridlington Yorkshire.
Priory church of; by M. Prickett. 1836

Bristol
Calendars of Al-hallowen, Brystowe; by H. Rogers. 1846

Bristol Society for Promoting the Study of Gothic Architecture
Reports of the proceedings. 8o. *Bristol* 1842
Report of proceedings at a Special General Meeting. pamph. 8o. *Bristol* 1842
Notes, historical and architectural, of the church of St. John the Evangelist, Slymbridge, Gloucestershire. Drawings by F. Niblett. pamph. 8o. *Bristol* 1845

British Association for the Advancement of Science
Address to the 34th meeting at Bath, on museums, their use and improvement; and on acclimatization of animals, by J. E. Gray. pamph. 8o. *Lond.* 1864

British Museum *see* **Society for the Diffusion of Useful Knowledge.**

Bruxelles
ACADÉMIE ROYALE DE BELGIQUE
Bulletins, 1857 to 1864 inclusive 8o. *Brux.* ——
———— Annuaire, 1855 to 1864 inclusive. 12o. *Brux.* ——

Bryce (D)
Account of Fettes College, Edinburgh. SP. 24 Apl. 1865

Buildwas Shropshire.
Abbey church, by J. Potter. 1844

Burge (W)
Temple Church, London; account of its restoration and repairs. 8o. *Lond.* 1843

Burgess (R)
Thermæ of Ancient Rome. From the Civil Engineer, etc. Journal. pamph. 4o. *Lond.* 1842

Burnell (G R)
Present tendencies of architecture and architectural education in France. SP. 24 Apl. 1865
———— Discussion. SP. 29 May 1865

Buscemi (N)
Basilica di S. Pietro detta la capella regia, raccolte ed esporte dal N. B. 4o. *Palermo* 1840

C.

C (E I) *see* **Carlos (E I).**

Cabinet Work
Catalogue of specimens exhibited at Gore house; by the Science and Art Department. 1853

Cambridge
Historia collegii Jesu Cantabrigiensis, by A. J. Sherman. Edited by J. O. Halliwell. 1840
University and college antiquities, by H. A. Woodham. 1841
St. Matthew's church. Laying of the foundation stone. Anonymous. 1864
———— Reports of the proceedings. Anonymous. 1864
Church of the Holy Sepulchre: by Cambridge Camden Society. 1844
———— Restoration of Round church; by Cambridge Camden Society. 1845

Cambridge Antiquarian Society
Reports to general meetings. 8o. *Camb.* 1841-43

Cambridge Camden Society
Transactions, 1839-44. Parts i-iii. 4o. *Camb.* 1841-45

Cambridge Camden Society—*continued.*

A few hints on the practical study of ecclesiastical antiquities. 1st, 2nd, and 3rd edits. pamph. 8o. *Camb.* 1839-40-42

A few hints on the practical study of ecclesiastical architecture and antiquities. 4th edit. pamph. 8o. *Camb.* 1843

Argument for the Greek origin of the monogram I.H.S. pamph. 8o. *Camb.* 1841

Church enlargement and church arrangement. pamph. 8o. *Camb.* [1843]

Few words to churchwardens on churches and church ornaments. No. 1. Suited to country parishes. 1st, 3rd, 4th, 6th-10th edits. pamph. 8o. *Camb.* 1841

——— 11th, 12th, 13th and 14th edits. pamph. 8o. *Camb.* 1842-43-46

Few words to churchwardens on churches and church ornaments. No. 2. Suited to town and manufacturing parishes. 1st and 2nd impressions (*not published*). pamph. 8o. *Camb.* 1841

——— 1st and 3rd edits. pamph. 8o. *Camb.* 1841

——— 4th, 5th and 6th edits. pamph. 8o *Camb.* 1842-43

Few words to the parish clerks and sextons of country parishes. 1st and 2nd edits. pamph. 8o. *Camb.* 1843

Few words to church builders. 1st, 2nd and 3rd impressions (*not published*). pamph. 8o. *Camb.* 1841

——— With an appendix, containing lists of windows, fonts, and rood screens, intended to serve as models. 1st and 2nd edits. pamph. 8o. *Camb.* 1841-42

——— 3rd edit. (no lists). pamph. 8o. *Camb.* 1844

Account of the church of St. Mary the Virgin, Stow, Lincolnshire (*not published*). pamph. 8o. *Camb.* 1841

History of pews; with an appendix containing a report on the statistics of pues. 1st and 2nd edits. pamph. 8o. *Camb.* 1841-2

——— Supplement. pamph. 8o. *Camb.* 1842

——— 3rd edit. with supplement. pamph. 8o. *Camb.* 1843

Twenty-three reasons for getting rid of church pews (or pues). pamph. 8o. ——

Twenty-four reasons for getting rid of church pews (or pues). pamph. 8o. ——

Church of the Holy Sepulchre, Cambridge. pamph. 8o. *Camb.* 1844

——— Restoration of the Round church. pamph. 8o. *Camb.* 1845

see **Ecclesiological Society.**

Camden Society

Chronicle of the first thirteen years of the reign of Edward IV, by J. Warkworth. Edited by J. O. Halliwell. 8o. *Lond.* 1839

Camden (W)

Britannia; or, a chorographical description of Great Britain and Ireland, with the adjacent islands. 2 vols. 4o. *Lond.* 1772

Canterbury

Cathedral; heraldic notices of: by T. Willement. 1827

Carburi de Ceffalonie (Comte M)

Monument de Pierre-le-Grand, etc. fo. *Paris* 1777

C[arlos] (E I)

Norman building recently discovered in Southwark. From the Gentleman's Magazine. pamph. 8o. 1832

Crypt at St. Saviour's church, Southwark. From ditto. pamph. 8o. 1835

Church of St. Edmund on the bridge, Exeter. From ditto. pamph. 8o. 1835

Nateley church, Hampshire. From ditto. pamph. 8o. 1836

Nursted Court, Kent. From ditto. pamph. 8o. 1837

Winchester House, London. From ditto. pamph. 8o. 1839

Churches of St. Bartholomew by the Exchange, and St. Benet Fink, London. From ditto. pamph. 8o. 1840

Shottesbroke church, Berkshire. From ditto. pamph. 8o. 1840

Niche in St. Bartholomew church, London. pamph. 8o. 1841

Carpenter (R C)

Cathedral of St. Patrick, Dublin. Plates fo. *Lond.* ——

Carpentry

Specimens of ancient; by J. Smith. 1787

Cathedrals

Of England and Wales, by H. Winkles. 1836-38

Caumont (A de)

Statistique monumentale du Calvados:—
Vol. I. Arrondissement de Caen. 8o. *Caen* 1846
„ II. ——— Falaise. 8o. *Caen* 1848

Bulletin monumental, ou collection de mémoires sur les monuments historiques de France. 3rd series, vol. x. Vol. xxx. de la collection, Nos. v-viii. 8o. *Caen* 1864

——— 4th series, vol. i. Vol. xxxi. de la collection, Nos. 1 and 2. 8o. *Caen* 1865

Cautley (Sir P T)

A valedictory note to Sir A. Cotton respecting the Ganges canal. pamph. 8o. *Lond.* 1864

Cauty (W)

On the construction and building of chimneys, including an enquiry into the common causes of their smoking, 8o. *Lond.* 1772

Chandler (R) *see* **Society of Dilettanti.**

Chautard (I) and Lejeune (T)
Description du tombeau de l'empereur Napoléon I., Paris. pamph. 12o. *Paris* 1853

Chester
Design for new town hall buildings. Anonymous. 1864

Chimneys
Construction and building of; by W. Cauty. 1772
Cure of smoky; by A. Walker. 1777
Dissertation on; by R. Clavering. 1779
Treatise on smoky chimneys, by F. Edwards, Jun. 1864
Treatise on domestic fire-places, by F. Edwards, Jun. 1865

Church Architecture
Introduction to a history of; by W. Lübke. 1855
Church builders, by E. Yorick. 1842

Church Decoration by A. Billing. 1851

Church Enlargement *see* **Cambridge Camden Society.** 1840-43

Churches
Architectographie des temples chrêtiens, by H. D. L. van Overstraeten. 1850
Arrangement of; *see* **Cambridge Camden Society.**
——— *see* **Anonymous.**

Church Furniture
Specimens of ancient sepulchral crosses, etc. pamph. 4o. *Oxford* 1843

Church of England
Constitution and canons ecclesiastical. Anonymous. pamph. 8o. *Camb.* 1825

Church of England Quarterly Review
Life and times of Thomas à Beckett. pamph. 8o. *Lond.* 1841

Church Services
Minor accessories to; by G. J. French. 1844
Church subjects, by E. Scobell. 1843

Civil Service
Estimates for the year ending 31 Mar. 1861. Nos. iv and vii. 4o. *Lond.* 1861

Clark (H)
Introduction to heraldry. 12th edit. 8o. *Lond.* 1834

Clarke (T H)
History of the collegiate church of Southwell, by W. B. Killpack and T. H. Clarke. 1839

Clarke (W B)
Gothic architecture. Written for P. Nicholson's "Masonry," etc. 4o. *Lond.* ——

Clavering (R)
Dissertation on the construction of chimneys. 8o. *Lond.* 1779

Cluny
Abbaye de; essai historique, by M. P. Lorain. 1839

Cologne
Cathédrale de; by A. de Binzer. ——

Companion
To the almanac, and year book of general information. 8o. *Lond* 1865

Constance
Brass in cathedral, by R. Pearsall. 1844

Cooke (W B)
see **Pinelli (B).**
Italian scenery. Descriptions by T. L. Donaldson. 4o. *Lond.* 1836

Coppersmith
Trade list, by Benham and Froud. ——

Coste ( ) *see* **Paris** ACADÉMIE DES BEAUX ARTS.

Cottages
Notes on; by the Northampton Architectural Society. ——

Coventry
St. Mary's hall; tapestry in; by G. Scharf. 1856

Crosby ( )
Builders' new price book. 8o. *Lond.* 1804

D.

Daly (C)
Ce que peut raconter une grille de fer, de l'influence des femmes sur l'architecture au XVIII siècle. pamph. 8o. *Paris* 1864

Damascus
Antique portico; by W. A. Hamilton and Sir G. Wilkinson. MS. SP. 1845

Daniell (T)
Oriental scenery. Twenty-four views in Hindoostan, taken in 1789 and 1790. Text only. pamph. 8o. *Lond.* 1795

Daniell (T and W)
Oriental scenery. Twenty-four views in Hindoostan, taken in 1792. Text only. pamph. 8o. *Lond.* 1797
Antiquities of India. Twenty-four views from drawings taken in 1790 and 1793. Text only. pamph. 8o. *Lond.* 1800
Oriental scenery. Twenty-four views in Hindoostan. Text only. pamph. 8o. *Lond.* 1801
Twenty-four Landscapes (fourth series) views in Hindoostan. Text only. pamph. 8o. *Lond.* 1807

Daniell (T) and Wales (J)
Hindoo excavations in the mountain of Ellora, near Aurungabad. Text only. pamph. 8o. *Lond.* 1804

Darbishire (H A)
Suggestions on the introduction of coloured bricks, etc. in elevations. SP. 23 Jan. 1865

D'Argenville (A N) *see* **Dezalier d'Argenville (A N).**

Darmstadt Hessische vereine für die aufnahme mitteralterlicher Kunstwerke zu Darmstadt
Denkmäler der Deutschen baukunst. fo. *Darmst.* 1846-60
Statuten. 8o. *Mainz* 1845
Jahresberichte. 8o. *Darmst.* 1846-63

Decoration
Mural painting, etc., by A. Billing. 1851

Dehn-Rotfelser (H von)
Mitteralterliche baudenkmaeler in Kurhessen. fo. *Kassel* 1865

Department of Practical Art
Addresses at the opening of an elementary drawing school at Westminster. pamph. 8o. *Lond.* 1852
see **Science and Art Department.**

Dilapidations
by T. Morris. 1865

Dindorfius (L)
Pausaniæ descriptio Græcæ. Greek and Latin text. 8o. *Paris* 1845

Domestic Architecture
Abitazioni lacustri, by P. Lioy. 1865
English gentleman's house, by R. Kerr. 1865
In England, during Elizabeth's reign, by C. J. Parker. 1838
Of the middle ages, by W. Twopeny. ——
Present and future, by G. G. Scott. 1858
see **Dwellings.**
see **Rural Architecture.**

Donaldson (T L)
Selection of ornamental sculptures; *see* **Moses (H).** 1828
Italian scenery, by W. B. Cooke and T. L. Donaldson. 1836
Charge delivered to a jury summoned to make presentments on the districts of the Ranelagh and Counters Creek sewer. pamph. 8o. *Lond.* 1839
Description of the church at Ani, in Armenia. Translated from the Revue Générale de l'Architecture. SP. 23 Jan. 1843
Report on drawings by Palladio, at Chiswick, by A. Poynter and T. L. Donaldson. MS. SP. 17 Nov. 1845
Opening address at R.I.B.A. SP. 7 Nov. 1865
Necrological notice of the Duke of Northumberland. SP. 20 Mar. 1865
———— Of J. M. Lockyer. SP. 20 Mar. 1865

Donaldson (W L)
Heraldry and its connection with Gothic architecture. pamph. 8o. *Lond.* 1837

Dublin
Cathedral of St. Patrick; by R. C. Carpenter. ——

Duc (J L)
Colonne de 29 Juillet 1830, Paris. Described by A. L. T. Vaudoyer. MS. SP. 20 Dec. 1841

Dunfermlin Scotland. *see* **Bannatyne Club.**

Dunhill (T)
Health of towns. Selection from papers on sanitary reform, with minutes of evidence on Smithfield cattle market, and establishing public abattoirs. pamph. 8o. *Lond.* 1848

Dwellings
see **Domestic Architecture.**
see **Rural Architecture.**

E.

Ecclesiological Society (formerly Cambridge Camden Society)
Reports, 1845-46; 1850-53. 8o. *Lond.* 1845-53
———— 8o. *Lond.* 1859-60
History of christian altars. 2nd edit. pamph. 8o. *Lond.* 1847

Edinburgh
Fettes College; account of, by D. Bryce. SP. 1865
Royal Scottish Academy Descriptive catalogue of the casts by C. H. Wilson. 2nd edit. 8o. *Edin.* 1839

Edward IV
Chronicle of the first thirteen years of the reign of; by J. Warkworth. Printed by the Cambridge Camden Society. 1839

Edwards (F)
Memoir of H. H. Seward. MS. 1848

Edwards (F) Jun
Treatise on smoky chimneys; their cure and prevention. pamph. 8o. *Lond.* 1864
Our domestic fire places; a treatise on the economical use of fuel and the prevention of smoke, with observations on the patent laws. 2nd edit. 8o. *Lond.* 1865

Eggert (F)
Sammlung Gothischer verzierungen. (Not perfect). fo. *München* ——

Ely
Cathedral church and conventual buildings, by G. Millers. 1834
———— Statement of works in progress, by H. Goodwin. 1865
Form used at the consecration of churches and chapels in the diocese of Ely. pamph. 8o. *Ely* ——

England and Wales
Ancient monastic architecture, by J. Potter. 1844
Antiquities of; by F. Grose. 8 vols. 1784-87
Cathedrals of; by H. Winkles. 1836-38

Examination Papers
In architecture, painting, and sculpture, by W. J. Beamont. 1865
see **Institute of British Architects.** 1863-64
see **Civil Service Commissioners.** 1858-62

Exeter
Cathedral; misereres in the choir, by J. W. Hewett. 1849
St. Edmund on the bridge, church of; by E. I. C(arlos). 1835

F.

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